THE LANCET.

No. 4206. Vol. CLXVI. LONDON, SATURDAY, APRIL 9, 1904. [Pp. 120+32.

CONTENTS.

HUNTERIAN LECTURES on Fractures of the Skull. Delivered before the Royal College of Surgeons of England on Feb. 29th and March 2nd and 4th, 1904, by LOUIS BATHE RAWLING, M.B. Cantab., F.R.C.S.Eng., Senior Demonstrator of Anatomy, St. Bartholomew's Hospital.—Lect. I. (*Illustrated*) 973

ORIGINAL ARTICLES.

On the Use of Dr. Marmorek's Antituberculous Serum. By ARTHUR LATHAM, M.A., M.D. Oxon., Assistant Physician and Lecturer on Practical Medicine at St. George's Hospital; Assistant Physician at the Brompton Hospital for Consumption and Diseases of the Chest..... 979

The Mental Condition in Epilepsy in Relation to Prognosis. By WILLIAM ALDREN TURNER, M.D. Edin., F.R.C.P. Lond., Physician to Out-patients at the National Hospital for the Paralysed and Epileptic and at King's College Hospital; and Visiting Physician to the Colony for Epileptics, Chalfont St. Peter..... 982

The Cardiac Dulness in Cases of Cancer. By W. GORDON, M. D. Cantab., F. R. C. P. Lond., Physician to the Royal Devon and Exeter Hospital.—(*Illustrated*) 986

A Case of Removal of a Polypoid Growth from the Base of the Skull after a Preliminary Excision of the Upper Jaw. By F. A. SOUTHAM, M.A., M. B. Oxon., F. R. C. S. Eng., Surgeon to the Manchester Royal Infirmary; Professor of Clinical Surgery, the Owens College, Manchester 989

A Case of Carcinoma probably originating in Retained Testis. By W. SYDNEY DARBY, M.A., M.B., B.C.Cantab., L.R.C.P. Lond., M.R.C.S.Eng.—(*Illustrated*) 989

Dilatation of the Heart. By E. H. COLBECK, M.D.Cantab., M.R.C.P.Lond., Physician to Out-patients at the City of London Hospital for Diseases of the Chest, Victoria-park, E.; Physician to the Metropolitan Dispensary, Fore-street, E.C. 990

Intralaryngeal Growths treated by means of the Galvanocautery. By J. DUNDAS GRANT, M.A., M.D.Edin., F.R.C.S.Eng. & Edin., Surgeon to the Central London Throat and Ear Hospital, &c. (*Illustrated*) 993

A Non-toxic Preparation of Iodine. By V. H. WYATT WINGRAVE, M.D Durh., M.R.C.S. Eng., Physician to the Central London Throat and Ear Hospital 994

A MIRROR OF HOSPITAL PRACTICE.

THE FRENCH HOSPITAL, SHAFTESBURY-AVENUE:
Six Consecutive Cases of Disease of the Fallopian Tubes. (Under the care of Dr. S. Sunderland and Mr. Edmund Owen) 994

MEDICAL SOCIETIES.

SOCIETY FOR THE STUDY OF DISEASE IN CHILDREN:
Exhibition of Cases and Specimens 996

GLASGOW MEDICO-CHIRURGICAL SOCIETY:
Lupus.—Chloride of Ethyl as a General Anæsthetic..... 997

GLASGOW OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY:
Exhibition of Specimens.—Ulcer of the Stomach.—Ventro-fixation for the Relief of Uterine Prolapse and Retroflexion 997

ROYAL ACADEMY OF MEDICINE IN IRELAND:
Exhibition of Specimens 997

NEWPORT (MON.) MEDICAL SOCIETY:
The Value of Venesection in Over-distension of the Right Side of the Heart 997

REVIEWS AND NOTICES OF BOOKS.

Vaginal Tumours, with Special Reference to Cancer and Sarcoma. By W. Roger Williams, F.R.C.S.Eng. 998

La Peste: Étude Critique des Moyens Prophylactiques Actuels. By Dr. J. Th. Dupuy 998

La Fièvre Jaune. By Dr. J. Th. Dupuy 998

The Roentgen Rays in Therapeutics and Diagnosis. By William Allen Pusey, M.D., and Eugene Wilson Caldwell, B.S. 999

Photothérapie et Photobiologie. By Dr. R. Leredde and Dr. L. Pautrier 999

Lectures on Physiology, published under the Authority of the University of London. Vol. I. By Augustus D. Waller, M.D.Aberd., F.R.S... 1000

The Pathogenic Microbes. By M. le Dr. P. Jousset. Authorised Translation of Horace P. Holmes, M.D. 1000

Medical Annals and Report of the Hamidie Children's Hospital for 1902 1000

The Book of Herbs. By Lady Rosalind Northcote 1001

Charles White, F.R.S.: a Great Provincial Surgeon and Obstetrician of the Eighteenth Century. By Charles J. Cullingworth, M.D. 1001

Traité de Radiologie Médicale. Published under the direction of Ch. Bouchard 1001

Cours de Dermatologie Exotique. Par E. Jeanselme ... 1001

Nurse Charlotte. By L. T. Meade 1001

The Journal of Physiology. Edited by Sir Michael Foster, K.C.B., F.R.S., and J. N. Langley, F.R.S. Vol. XXX., Nos. 5 and 6 1001

The Journal of Hygiene. Vol. 4, No. 1.. 1002

NEW INVENTIONS.

Instrument for the Removal of Foreign Bodies from the Nose.—(*Illustrated*) 1002

Note on a Simple Sterilisable Bag for Closed Ether Inhalers 1002

LEADING ARTICLES.

THE EDUCATION ACT AND PHYSICAL FITNESS 1003

THE CUMULATIVE ACTION OF DRUGS..... 1004

REMARKABLE RESUSCITATIONS 1005

ANNOTATIONS.

The Nomenclature of Death Certification..... 1006

The Holman Testimonial..... 1006

Sanitary Work 1007

Guardians and their Officers ... 1007

Fatal Ulcerative Stomatitis after Measles 1007

Women Inebriates 1008

Islington Medical Society 1008

Leprosy in New South Wales... 1008

Deaths and Quack Medicines... 1008

The Sporozoa in relation to Disease in Man and Animals 1009

The State Registration of Nurses 1009

The Distribution of Plague..... 1010

The Cassel Fund Travelling Ophthalmic Hospital in Egypt 1010

Radio-activity a Property of the Droitwich Brine Baths .. 1010

Thrombosis of the Jugular Veins in Pulmonary Tuberculosis..... 1010

International Congress of School Hygiene 1011

LOOKING BACK.
(From THE LANCET, Saturday, April 8, 1826.)

Case of Apparent Superfetation. By Joseph Fithian, M.D. 1013

VITAL STATISTICS:
Health of English Towns..... 1014
Health of Scotch Towns 1014
Health of Dublin 1014

SPECIAL ARTICLES.

Who Performed Lithotomy on Mr. Samuel Pepys? By D'ARCY POWER, F.S.A., F.R.C.S. Eng., Treasurer of the Samuel Pepys Club 1011

Central Midwives Board 1013

Medicine and the Law 1013

The Services 1014

Notes from India 1017

Birmingham..... 1018

Manchester 1019

Wales and Western Counties Notes 1020

Ireland 1021

Paris 1021

New York 1022

CORRESPONDENCE.

The Holman Testimonial (Dr. John H. Galton, Mr. W. A. Berridge) 1015

The Painful Pronation of Childhood (Dr. A. Keith) 1015

On the Operative Treatment of Renal Headache (Dr. Stuart Tidey)..... 1016

Sulphonal Poisoning (Mr. J. L. Whatley)..... 1016

Pneumonia in Early Life (Dr. Edgar Duke)..... 1016

Transposition of the Viscera (Dr. William Hartland)..... 1017

Eclampsia and Chloroform (Mr. A. H. Haines)..... 1017

Dr. J. T. C. Coury's Defence Fund (Dr. Edwin T. Ensor)... 1026

Note on the Value of Garlic as a Treatment for Tuberculosis (Dr. E. Blake Knox) 1026

The Morphia Habit 1026

OBITUARY.

Frank Renaud, M.D. Edin., M.R.C.S.Eng. 1023

J. Peeke Richards, M.R.C.S. Eng., L.S.A..... 1023

MEDICAL NEWS.

Hospital Sunday Fund in Bristol..... 981

Brentwood Convalescent Home for Children 997

Pass-list of the University of Aberdeen 1023

Royal College of Surgeons in Ireland 1024

University of Oxford..... 1024

Health of Gloucester..... 1024

Bristol Eye Dispensary 1024

The County Council Elections in the West of England and Wales 1024

The Public House Trust 1024

Appointments..... 1024

Vacancies 1025

Births, Marriages, and Deaths 1025

Notes, Short Comments, and Answers to Correspondents .. 1025

Medical Diary 1027

FOR INDEX TO ADVERTISEMENTS SEE PAGES 2 & 4.

INDEX.

MEDICAL AND OTHER BOOKS AND PUBLICATIONS.

COVER.

PAGE

ARNOLD:—
Beddard, &c. Practical Physiology .. i

BAILLIERE, TINDALL & COX:—
Bell ..... Diseases of the Nose, &c. i
Campbell, H. Respiratory Exercises in Treatment of Disease.. i
Fraser .... Stricture of the Urethra i
Students' Aids Series..... i
Tubby ..... Appendicitis..... i

CORNISH BROS. (BIRMINGHAM):—
Foxwell .... Enlarged Cirrhotic Liver i
" .... Cardiac Murmurs i

GLAISHER:—
Herschell .. Intragastric Technique i
Kingscote .. Asthma i
Savill ..... Neurasthenia i
West ..... Granular Kidney, &c... i

GRIFFIN & CO.:—
Foxwell .... Heart and Lung Disease i

LEWIS:—
Bastian..... Aphasia i
" ..... The Brain as an Organ of Mind i
" ..... Paralysis i
" ..... Forms of Hysterical &c. Paralysis..... i
Campbell, H. Pleading, &c. i
" Headache i
Rose ..... Curvature of the Spine i

PENTLAND, Y. J.:—
Text-book of Anatomy..... i
Thomson & Miles..... Manual of Surgery i

SAUNDERS & CO.:—
Saunders' Medical Hand-Atlases i
Schaeffer & Webster's Operative Gynecology i

SMITH, ELDER & CO.:—
Hills ..... Anatomy i
Pinkerton .. Clinical Manual i

SMITH & ELDER (Continued).
Juler ..... Ophthalmic Science.... i
Marshall & Hurst .... Practical Zoology i
Playfair .... Practice of Midwifery .. i

MEDICAL LIBRARIES, &c.:—
Clinical Journal i
Davidson.—Gas: Testing for the G.P. i

BAILLIERE, TINDALL & COX:—
Allingham .. Diseases of the Rectum 10
" .. Colotomy, &c. 10
" .. Operative Surgery 10
Bigg ..... Constipation 11
Browne & Stevenson.. Squint Occurring in Children 10
Campbell, K. Refraction of the Eye .. 10
Latham .... Sanatorium Treatment of Tuberculosis..... 11
" .. Pulmonary Consumption 11
Manson .... Military Hygiene 10
Thorne ..... Nauheim Treatment.... 10

SALE, SONS & DANIELSSON:—
Moullin .... Inflammation of the Appendix 8
" .... Ulcer of the Stomach .. 8

BELL & BRADFUTE:—
Bedford .... Urine Analysis 11

CASSELL & CO.:—
Bland-Sutton Tumours 6
Bruce ..... Materia Medica, &c..... 6
Gould ..... Surgical Diagnosis 6
Herman .... Diseases of Women 6
" .... First Lines in Midwifery 6
" .... Difficult Labour 6
Hutchison & Rainy .. Clinical Methods 6
Hutchinson.. Syphilis 6
Klein & Edkins .... Elements of Histology... 6
Luff & Page. Manual of Chemistry .. 6
Manson, Sir P. Tropical Diseases 6
Marsh ..... Diseases of the Joints .. 6

CASSELL & CO.—(Continued).
Morris, H. .. Surgical Diseases of the Kidney and Ureter 8
Morris, M. .. Diseases of the Skin 6
Savage ..... Insanity &c. 6
Treves, Sir F. Operative Surgery 6
" Intestinal Obstruction... 6
" Surgical Anatomy..... 6
" Surgical Operations 6
Yeo ..... Medical Treatment 6
" ..... Food in Health, &c 6
" .. Mineral Springs, &c. .. 6

CHURCHILL, J. & A.:—
Cripps ..... Ovariotomy, &c. 10
Harrison .... Stone Prostate, &c 8
Jessop ..... Ophthalmic Surgery .. 10

GRIFFIN & CO.:—
Mann ..... Urine 8
West ..... Organs of Respiration.. 11

KEGAN PAUL & CO.:—
Taylor ..... Diseases of the Eye 10

KIMPTON, H.:—
Hare ..... Practical Diagnosis 7
Thornton .. Kimpton's Pocket Medical Formulary 7
Trentise on Surgery 7

LEWIS —
Abbott ..... Bacteriology 7
Lewers..... Diseases of Women 3
" ..... Cancer of the Uterus .. 3
Martindale & Wesicott .. Extra Pharmacopœia .. 6
Moullin .... Enlargement of the Prostate 8
" .... Inflammation of the Bladder..... 8

Parkes & Kenwood.. Hygiene, &c..... 3
Swanzy ..... Diseases of the Eye, &c. 5
The New Sydenham Society 3

MACMILLAN & CO.:—
Hewitt ..... Anæsthetics 6
Lockwood .. The Surgery of Appendicitis 10

PENTLAND, Y. J.:—
Lockwood .. Aseptic Surgery..... 10
" .. Cure of Hernia &c..... 10
Waring .... Diseases of the Liver &c. 8
" .. Operative Surgery 8

REBMAN:—
Archives of the Roentgen Ray, &c. .. 9
Cohen's System of Physiologic Therapeutics 9
Cushny .... Pharmacology, &c. 7
Dunn ..... Medical Dictionary 7
Edgar ..... Practice of Obstetrics .. 9
Hall ..... Text-book of Physiology 7
Jennings .... Manual of Plague 9
Mitchell & Gulick .... Mechanotherapy 9
Treatment 9

RENSHAW:—
Wood ..... Application of Trusses 11

SAUNDERS & CO.:—
Nothnagel's Practice 8
Saunders' Hand-Atlases 5
Schaeffer & Webster's Operative Gynecology 5

SCIENTIFIC PRESS:—
Henry ..... District Nursing on a Provident basis 11

SMITH, ELDER & CO.:—
Juler..... Ophthalmic Science, &c. 8
Keetley .... Orthopædic Surgery.... 8
" .... Gastric Ulcers..... 8
" .... Complicated Fractures 8
Lawson .... Diseases and Injuries of the Eye..... 9

MEDICAL LIBRARIES, &c.:—
Baker—Books wanted 10
Rehnke—Stammering 10
Cox.—Catalogue of X-Ray, High Frequency, &c., Apparatus 11
Glaisher—Publishers' "remainders.... 11
Lewis's Medical and Scientific Library 9

OFFICIAL AND GENERAL ANNOUNCEMENTS.

APPOINTMENTS VACANT:—
Bury Infirmary 84
Colony of Victoria 84
East London Hospital for Children, &c., Shadwell 83
Great Yarmouth Hospital 83
Hospital for sick Children, Great Ormond-street 84
Hospital for Women and Children, Leeds..... 84
Leicester Infirmary 84
Manchester Southern and Maternity Hospital 84
Margaret-street Hospital for Consumption, &c. 84
Middlesex Hospital 84
Northampton General Hospital 83
Preston Royal Infirmary 83
Royal Eye Hospital, Southwark 83
Royal Free Hospital Gray's Inn-road 84
Royal Sea Bathing Hospital, Margate 84
Samaritan Free Hospital for Women 84
Seamen's Hospital Society 83
Society of Apothecaries, London 84
St. Bartholomew's Hospital 84
Tiverton Infirmary and Dispensary .. 84
Warwick County Asylum 84
West Kent General Hospital, Maidstone 83

ASSISTANCIES, MEDICAL 80

ASYLUMS, HOMES, &c.:—
Aberystwith, the Hafrits of Wales .. 77
Altadore Sanatorium, co. Wicklow .. 79
Ashwood House, Kingswinford 74
Barnwood House Hospital 78
Battelley, Bromsgrove 82
Bishopstone House, Bedford 74
Bodorgan Manor, Bournemouth 83
Bridger Hart, Regent-street 81
Buntingford House Retreat, Herts .. 74
Camberwell House, Peckham-road.... 74
Cheadle Royal, Cheadle 82
C., Holborn 82
Clarence Lodge, Clapham-park 82
Cappice, The, Nottingham 82
Cornwall Winter Health Resorts 77
Cotswold Hostel for Consumptives, Birdlip 80
Cotswold Sanatorium 79
Crookesbury Sanatorium, Surrey 74
Dalrymple House, Rickmansworth .. 74
Dartmoor Sanatorium 83
Dorchester Asylum 74
Dunstone Park Sanatorium, Paignton 79
East Anglian Sanatorium Co., Suffolk 79
Fairford Retreat, Gloucestershire ... 74
Ferguson, Barnet 81
Flower House, Catford 76
Grove House, Church Stretton 78
Grove, The, Catton, Norwich 78
Hailey Sanatorium, Ipsden 76
Haydock Lodge, Newton-le-Willows.. 78
High Shot House, Twickenham 74
Hitch, Mrs., Rodlington 76
H., Westminster 82
Inverurie Lodge Retreat, Dumfries .. 76
Lacy Superintendent, Brighton 82

ASYLUMS—(Continued).
Lady Superintendent, Streatham 80
Lawson, Nordrach-on-Dee, Banchory 79
London Open-Air Sanatorium, Wokingham 80
Maple House, near Dumfries 74
Maternity Home, New King's-road .. 81
Melbourne House, Leicester 76
Middleton Hall, Co. Durham 74
Moat House, Tamworth 76
Moorcroft, Erewsley 82
Nordrach in Wales..... 78
Nordrach-upon-Mendip Sanatorium.. 79
Northlands Retreat, Wandsworth 74
Northwoods House, Winterbourne.... 74
No. 10, L.O., Strand..... 81
No. 300, L.O., Strand..... 82
No. 426, L.O., Strand..... 81
No. 544, L.O., Strand..... 74
No. 593, L.O., Strand..... 82
No. 614, L.O., Strand..... 82
No. 627, L.O., Strand..... 82
Ochil Hills Sanatorium 80
Overdale, Whitefield 82
Pertwin, Winchelsea 76
Plas-yn-Dinas, Wales 77
Plympton House, South Devon 76
Rostrevor Open-air Sanatorium 80
Shaftesbury House, Formby..... 74
Small-pox, &c., Hos., South Mimms 82
Springfield House Private Asylum, Bedford 74
St. Andrew's Hospital, Northampton 76
Stewart, Dr., Dunmarry 82
St. Luke's Hospital, E.C. 76
Stocker, Craven-street 81
Stone House, Canterbury 82
Streton House Church Stretton 78
The Silver Birches, Epsom 81
Thunderclife Grange, nr. Rotherham 83
Tower House, Leicester 76
Turner, Adolphi 84
Vale of Clwyd Sanatorium..... 80
Warneford Asylum, Oxford 76
West Malling-place, Kent 77
Winchester House, Kingston-hill 81
Wonford House, Exeter 76
Wye House, Buxton 76
Wyke House, Isleworth 76
Yarrow Convalescent Home, Broadstairs 77

BATHS:—
Bad Ruckenau..... 82
Bad Ems 81
Badgastein 82
Moffat Hydropathic 82
Smedley's, Matlock 82
Woodhall Spa Baths 81

COMPANIONS:—
No. 633, L.O., Strand..... 80

FINANCIAL, &c.:—
Birkbeck Bank..... 72
English and Scottish Law Life Office.. 72
Equitable Reversionary Interest &co. 72

HOMES, &c., WANTED 82

HOTELS:—
Burton Court Hotel, New Milton 74
Ilfracombe—Ilfracombe Hotel 74
Montreux Hotel and Chateau, Belmont 74
Vulpera-Tarasp—
Hotel Schweizerhof 75
" Waldhaus 79

HOUSE & ESTATE AGENTS:—
Broad, Wiltshire & Penny, Cheapside 88
Elliott, Son, & Boyton, Vere-street .. 89
No. 366, L.O., Strand..... 86
Omega, Ipswich 89
CONSULTING-ROOMS:—
No. 487, L.O., Strand..... 89
No. 619, L.O., Strand..... 86

LIFE & FIRE ASSURANCES:—
Prudential 72

MEDICAL ACCOUNTANTS &c.:—
Turner 88

MEDICAL AGENTS:—
Hall & Hardwicke 87
Lee & Martin..... 84
London Medical Agency 84
Manchester Medical Agency 87
Medical Agency 86
Moore 88
Needes, Herbert 86
Needes, J. C. 87
Orridge..... 88
Peacock & Hadley 86
Scholastic, Clerical, &c. Assoc. 86
Turner 85
Wilson & Son 87

MEDICAL SCHOOLS (London):—
Charing Cross Hos. Medical School .. 67
Cooke's School of Anatomy 64
King's College, London 64
London Hospital Medical College 67
London (Royal Free Hospital) School of Medicine for Women 64
London School of Tropical Medicine 67
Medical Graduates' College, &c. 67
Royal Dental Hospital of London Medical School 65
St. Bartholomew's Hos. and College .. 83
St. Mary's Hospital Medical School .. 67
St. Thomas's Hospital 67
West London Post-Graduate College.. 70
Westminster Hosp. Medical School.... 6

MEDICAL SCHOOLS (Provincial):—
Owens College, Manchester..... 69
St. Mungo's College, Glasgow 69
University College, Bristol..... 69
University of Aberdeen 69
University of Durham College of Medicine 69
University of Glasgow 64
University of Liverpool 69
University of Liverpool School of Dental Surgery 69

NURSING INSTITUTES:—
Clapham and Brixton Nursing Association 72
Clapham School of Midwifery 78
General Lying-in Hospital, Lambeth 73
General Nursing Institution 72
Gower, Weymouth-street 72
Hos. for Sick Children, Gt. Ormond-st 72
Incorporated Society of Trained Masseuses 72
Leeds Trained Nurses' Institution .. 73
London Nurses' Association 73
Male and Female Nurses' Assoc. 73
Male Nurses' Association 73
Male Nurses' Co-operation 73
Middlesex Hos. Trained Nurses' Inst. 73
Nurses' Co-operation, Portland-place 73
Queen Charlotte's Lying-in Hos..... 72
Registered Nurses' Society 73
St. Bartholomew's Hos. Nurses' Inst. 72
St. John's House 73
Temperance Male and Female Nurses' Co-operation 72
Temperance Male Nurses' Co-operation 73

OFFICIAL NOTICES:—
Central London Throat, &c., Hos..... 69
Examination Hall 70
Guy's Hospital 71
Hospital for Skin Diseases, Glasgow.. 64
King's College, London 70
London Hospital Medical College 70
London Throat Hospital 68
Manchester Hospital for Consumption 71
Medical Defence Union, Ltd..... 67
Medical Department of the Navy..... 10
National Hos. for the Paralysed, &c.... 70
Naval Medical Examination..... 72
Post-Graduate Class, Manchester 70
Queen Alexandra's Imperial Military Nursing service 69
Royal College of Physicians of London 70
Royal London Ophthalmic Hospital.. 71
St. John's Hos. for Skin Diseases 70
Surgical Aid Society 70
University College, London 69
University of Birmingham..... 64
University of Cambridge..... 69

PARTNERSHIPS & PRACTICES.. 83

RAILWAY & STEAMSHIP CO.'S:—
New Zealand Shipping Co..... 83
Orient-Pacific Line Pleasure Cruises.. 8
Royal Mail Steam Packet Co.—Tours 82

SCHOOLS, PREPARATORY, &c.:—
Manchester Physical Training College 71
School Ship Conway 71

TUTORS & LECTURERS:—
Duchesne 71
Fellowships .. 71
Gooch 71, 72
Kerin 72
Knight 71
Matthews & Co. 71
M.D. 71
No. 543, L.O. .. 72
No. 635, L.O. .. 80
Van Praagh.... 71
Weymouth 72

(For Index to Trade and Miscellaneous Advertisements see page 4.)

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INDEX—(CONTINUED).

TRADE AND MISCELLANEOUS ADVERTISEMENTS.

COVER.

PAGE

CHEMISTS & DRUGGISTS:—
McKesson & Robbins—
British Pharmacopœia Pills iii

FOODS:—
Benger's Food iv

SANITARY APPLIANCES, &c.:—
Sanitas Co.—
Sanitas Fluid ii
" Preparations ii

WATCHMAKERS, &c.:—
Smith & Sons, Ltd.—
All English "Doctor's" Watch .. iii
The "Astral" All English Lever iii
Motor Timepiece iii

ANATOMICAL MECHANICIANS:—
Muller—Artificial Eyes 12

BOTTLE MERCHANTS:—
Isaac 12
Islington Glass Bottle Company 12
Kilner Brothers, Ltd. 60

CARRIAGES, HORSES, &c.:—
Armstrong—
Coachmen's and Grooms' Liveries 61
Cortland Wagon Co.—
Cortland American Carriages 10
Darrow Co.—
Darrow Power Carriages 13
Humber, Ltd.—Motors 13
Maythorn & Son—
Ripon Buggy 14
Motor Mart—Motor Cars 14
Pellant—Motor Cars 14
Reading—Improved Carriages 14
Midgco—Single Opening Brougham .. 10
Speedwell Motor Co.—
Speedwell Car 14
St. John Ambulance—
Invalid Carriages 14

CHEMISTS & DRUGGISTS:—
Allen & Hanburys—
Castor Oil 61
Dymin Amara 55
Antitoxins, Sera, &c. 56
Vaporized Cresolene 13
Armour & Co.—
Suprarenalin Solution 49
Battle & Co.—Bromidia 60
Bayer Co.—
Agurin 55
Aspirin 58
Arlesochin 58
Mesotan 58
Helmitol 58
Theocin 58
Trional 58
Protargol 58
Charta 58
Brin's Oxygen Co.—Brin's Oxygen.... 60
Bullock & Co.—
Pepsina Porci 60
Acid Glycerine of Pepsine 60
Burgoyne, Burbidges & Co.—
Duotal 60
Salocreol 60
Warning 25
Burroughs, Wellcome & Co.—
Hemisine Products 40
Kepler Solution 41

PAGE

CHEMISTS—(Continued.)
Burroughs, Wellcome & Co.—
Tabloid Trade Mark 39
Tabloid Ophthalmic Products 45
" " Pocket Cases. 64
Christy & Co.—
Glyco-Thymoline 34
Cosmar & Son—
Mourry's Iodinated Wine 56
" " Syrup 56
Cacodylate of Sodium (Clin) 56
Lecithine (Clin) 56
Duncan, Flockhart & Co.—
Chloroform 27
Chlorj: Anæsthetic 27
Fellows—Syr. Hypophos. Co., Fellows 57
Gale & Co.—
Sagosan 62
" Antiseptics 62
Giles Schacht & Co.—
Liquor Bismuthi Sedatives 20
Pepsina Liquida 26
Pepsina Liq. c. Bismutho 26
Syr. Cinchonæ Alcoholicus 26
Howlett & Son—
Liq. Santal Flav. c. Buchu et Uvebeta 61
Jeyes' Sanitary Compounds Co.—
Cyllin 59
Kreochyle Co.—Harff Boro-Glycerids 61
Macfarlan & Co.—
Chloroform 60
Anæsthetic Ether 60
Maltine Manufacturing Co.—
Maltine with Cascara Sagrada 42
" Pepsin 43
Martin S. Smith Co.—
Glyco-Heroin 25
Meister Lucius & Bruning—
Valyl-Hoechst 30
Albargin 30
Orapher 30
Pyramidon 30
Anæsthesin 30
Tr genin 30
Pegnin 30
Guiacanol 30
Parke Davis & Co.—
Nuclein 23
Adrenalin, Takamine 24
Rafinos & Co.—
Slinger's Nutrient Suppositories . 62
Rebman—Antidiphtheritic Serum, &c 60
Sanguinosa Co.—Sanguinosa 62
Savory & Moore—
Pancreatic Emulsion 31
Scott & Bowne—Scott's Emulsion 57
Squire & Sons—
Glycero-Terperoin 33
Edible Terperoin 33
Pastil. Terperoin 33
Maltoglobin 33
Sennine 33
Kasai Elixir 33
Formaglobin 33
Tamar Indien Grillon 60
Wilcox & Co.—
Santal-Midy 56
Duncan's Syrup of Lacto-Phosphate 54
Morrhuol 54
Morrhuol-Creosote 54
Aptoline 56
Grimault's Cigarettes 62
Crystallised Digitaline 62
Cigars de Joy 62
Pantanberge's Solution 61
Willows, Francis, Butler & Thompson—
Mist. Stomachi Comp. 19
Mist. Certi Comp 59
Zimmermann, A. & M.—
Schering's Glycerophosphates 62

EMBALMERS:—
Pearce 11

PAGE

FOODS:—
Allen & Hanburys—
Allenburys Milk Foods 37
" " Malted Foods 37
Aylesbury Dairy Co.—
Humanised Milk 53
Blatchley's Diabetic Preparations 6
Bovril, Limited—Invalid Bovril 51
Cadbury's Cocoa 55
Callard & Co.—New Diabetic Foods .. 65
Carnrick & Co.—
liquid Peptonoids 40
Colemans & Co.—
Wincarnis 63
Fussell & Co.—Pure Cream 65
International Pisemon, Ltd.—
Pisamon 38
" Cocoa 38
" Arrowroot 38
Liebig's Extract of Meat Co., Ltd.—
Lemco 64
Maltco Food Co.—Maltco 65
Nicolay & Co.—
Hæmatogen 46
Protene Foods 66
Smith & Co.—Hall's Wine 55
Tibbles' Vi-Cocoa, Ltd.—Vi-Cocoa 54
Valentine's Meat Juice Co.—
Meat Juice 47
Van Abbott & Sons—
Foods for Diabetics and Obesity .. 65
Welford & Sons—
Sanitary Milk Supply 22
Wilcox & Co.—
Marlani Wine 62
Desiccated Extract of Malt 62

FURNITURE, &c.:—
Carter—Invalid Furniture 18
Maple & Co.—
Folding Card Table 19
Ashby Bookcase 19

HOSIERS, &c.:—
Knipp Linen Depot—
Knipps' Linen Mesh 66
Samuels—Shirts and Collars 61

MED. & SURG. APPLIANCES:—
Bailey & Son—
Veritite Truss 18
Infants' Trusses 18
Dowsett Belts Co.—Dowsett Belts 20
Down Bros.—
Surgical Hand Motor, &c. 17
Downing Radiant Heat Co.—
Downing Radiant Heat and Light Treatment 12
Hogg & Son—
Improved Steam Vaporisers..... 61
Holland—Instep Arch 13
Krohne & Sesemann—Bandar 61
Marconi's Wireless Telegraph Co.—
Induction Coils 60
Millikin & Lawley—Outcotogy, &c. .. 12
Pond—Arch Support Socks 66
Pope & Plante—
Elastic Stockings 61
Abdominal supporting Belts 61
Robins—& Sons—Sanguea Tissue 16
Sanitas Electrical Co.—
Light baths 63
Dermo and Triplet Lamps 63
Scales & Co.—
Kentbury Patent Medical Bag 12
Watson & Sons—
High Frequency Apparatus 13

MINERAL WATERS:—
Æsculap Bitter Water Co.—Æsculap.. 50
Apollinaris Co.—Apollin 48
Arabella, Ltd.—Arabella 64
Canwal, Ltd.—Canwal 64

PAGE

MINERAL WATERS—(Continued.)
Conservatoire Pavilion 64
Davis—Turnep Water 63
Ingram & Royle—
Rosat 52
Kissingen Mineral Waters 64
Salutaris Water Co.—
Salutaris Water 52

PHOTOGRAPHY:—
Martin—Developing Rollable Film .. 91

PRINTERS & ENGRAVERS:—
Cooke & Co.—
Brass Name Plates and Lamps 11
Culleton—
Brass Door Plates 91
Heraldry, &c. 91

SANITARY APPLIANCES, &c.:—
Aymard Patent Milk Steriliser Co.—
Milk Steriliser 20
Fassett & Johnson—
Emot-Kolect 58
Jeyes' Sanitary Compounds Co.—
Cyllin 59
Wright, Layman & Umney—
Liquor Carbonis Detergens..... 24

STATIONERY, &c.:—
John Heath & Co.—Pens 91
Partridge & Cooper, Ltd.—
Walker's Letteretics 65

TAILORS, BOOTMAKERS, &c.:—
Bult—
Frock Coat and Vest 16
Dowie & Marsha.l—Boots 15
Evans & Co.—
Riding and Polo Breeches 19
Frock Coat 19
Cashmere Trousers 19
Fisher & Sons—
Frock Coat and Vest 16
Trousers 19

TYPEWRITING, &c.:—
Cambridge Typewriting Agency, Adelphi 11
List, Haymarket 11
Metropolitan Typewriting &c. Agency, Chancery-lane 91

VACCINE LYMPH:—
Faulkner's Calf Vaccine Institution .. 64
Hime—Glycerinated Calf Vaccine 66
Jenner—Institute for Calf Lymph 65
Rebman—Pure Aseptic Glycerinated Calf Lymph 66
Renner's Calf Lymph Establishment.. 62
Wyleys, Ltd.—Calf Lymph 63

WATCHMAKERS, &c.:—
Benson—Doctor's English Watch 13

WINES, BEER, SPIRITS, &c.:—
Buck & Co.—"G 8" Diabetic Whisky 61
South's Distillery—Poltair 21
Dunville's Irish Whisky 52
Hunter's Liqueur Brandy 15
Harvey & Co.—Pale Ale 63
Martell's Three Star Brandy 45

MISCELLANEOUS:—
A. B. W.—Secretary 20
Barwick & Co.—S. Y. P. Teapot 12
B. U.—Secretary 20

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The Hunterian Lectures
ON
FRACTURES OF THE SKULL.

Delivered before the Royal College of Surgeons of England on Feb. 29th and March 2nd and 4th, 1904,

BY LOUIS BATHE RAWLING, M.B. CANTAB., F.R.C.S. ENG.,
SENIOR DEMONSTRATOR OF ANATOMY, ST. BARTHOLOMEW'S HOSPITAL

LECTURE I.

Delivered on Feb. 29th.

MR. PRESIDENT AND GENTLEMEN,—The subject which I have chosen for these lectures is one of exceptional interest on account of the obscurity of many of its details. In every large hospital abundant material is offered for the elucidation of many of these obscure features in cases of head injury, features which have been for many years the subject of discussion and dispute. The complete question of skull fractures and of the numerous complications, immediate and remote, which may subsequently ensue would require a much greater period of time than that which I have at my disposal and consequently I propose to discuss only certain of the more interesting points, limiting myself as far as possible to facts and theories which are either omitted or superficially treated in the majority of text-books. It is necessary first of all to mention briefly certain facts in connexion with the anatomy of both vault and base.

The vault varies in density in different cases to a remarkable extent, but in all it can be said to present areas of greater or lesser resistance, according to the density of the internal and external tables and the amount of intervening diploe. Ridges of bone, also, pass up from base to vault, ribbing and strengthening the skull, whilst the intervening areas, being weaker, offer a lesser resistance to blows. These bony buttresses pass up from (1) the crista galli; (2) the external angular frontal process; (3) the mastoid process; and (4) the occipital protuberance. As the result of a blow on the vault the forces are to a large extent transmitted to, and conducted along, these ridges towards the basic fossæ, whilst during their transmission in that direction a "deadening" of the forces is produced in several ways. 1. The convexity of the vault itself helps to distribute the forces over a large superficial area though the forces necessarily travel mainly in the direction of the applied force. 2. The intervention of fibrous tissue or of cartilage between two or more bones assists in the "deadening" of the transmitted forces. 3. The bony ridges themselves come to an end, terminating in front at the crista galli, in the anterolateral region converging to the anterior clinoid processes, and in the lateral region to the apex of the petrous bone. Posteriorly the forces are transmitted laterally along the lateral sinus ridges and forwards along the internal occipital crest to the strengthened margin of the foramen magnum and skirting that foramen the forces pass laterally to the jugular process of the occipital bone or forwards to the dorsum ephippii and to the posterior clinoid processes. 4. The supporting layers of the dura mater through their attachment to the above-mentioned bony ridges and prominences must necessarily receive a large share of the transmitted forces. The accompanying figure (Fig. 1) illustrates the great tendency of numerous forces to converge towards the pituitary region, which region is practically inclosed by the anterior and posterior clinoid processes and to each of these processes the tentorium cerebelli is attached. Now it is exceedingly common to find in the more severe basic fractures that these processes are torn away from their basic attachment. Especially is this the case with regard to the anterior processes which are frequently expanded at their apices and attenuated at the base, and in such cases no great force is needed to snap them off. A similar condition is, however, not infrequently seen when the processes are blunted and strong. The diagram also illustrates the main bony barriers along which the forces are conducted to the base and it is manifest that these ridges, with the intervening weaker areas, must play an important part in influencing the direction of a basic fracture.

The base of the skull is, again, in itself in many respects the weakest part of the skull. It is perforated by numerous foramina; it is hollowed out in places to form air sinuses and also to form a cavity for the integral parts of the auditory apparatus. One would therefore expect that basic fractures show some predilection for these weaker areas.

FIG. 1.

Showing how numerous forces tend to converge towards the pituitary region.

The base also lies practically in one plane, the forces, therefore, being transmitted straight across the base and not diffused, as is the case when a blow is applied to the vault. It would consequently appear probable that a fracture passing from vault to base would be most marked in the latter situation.

Basic fractures are produced in two ways—(1) by direct violence; and (2) by indirect violence.

Basic fractures by direct violence, generally regarded as of rare occurrence, include all such fractures as are produced by perforating wounds of the orbit, by bullet wounds through the roof of the mouth, by the driving inwards of the bones of the face, or the driving upwards of the condyles of the jaw, and such also as are produced by falls from a height on to the vertex, the forces then being transmitted through the occipital condyles. I shall, however, endeavour to show that direct violence is responsible for a far greater proportion of all basic fractures.

Basic fractures by indirect violence.—Under this heading are included in most text-books the great majority of basic fractures and various explanatory theories have from time to time been brought forward of which the following are the more important.

1. *Aran's theory of irradiation*, which states that "fractures of the base result as extensions from fractures of the vault, the force following the shortest anatomical route of the base."

2. *The bursting and compression theories.*—The skull is here regarded as a highly elastic sphere, compression of which leads to diminution in the diameter along the axis of greatest pressure, bulging occurring in other diameters. The bulging exceeding the limits of elasticity a fracture results, the line of fracture varying in different cases. 1. When the lines of fracture run parallel to the direction of the compressing force the bone bursts open along the convexity (bursting fractures). 2. When the lines of fracture run at right angles to the direction of the compressing force a fracture by "compression" is said to result (compression fractures). These theories are partly based on experiments which have been carried out by inclosing a skull in a tight-fitting box and subjecting the box to a compression force sufficient to produce a fracture. It is obvious, however, that in practice the very great majority of basic fractures are produced in quite a different manner, since over 90 per cent. result either from falls from a height, the front, sides, or

back of the head coming into violent contact with some resisting object, or else from blows applied directly to the various parts of the skull. In these cases there can be no question of compression. The elastic properties of the skull also are much exaggerated and the peculiar formation of the base, with its greatly varying areas of resistance, is not sufficiently taken into account. The skull, also, can in no sense be regarded as a sphere, since the vault forms less than two-thirds of a complete sphere, the base passing inwards from the lower limits of this segment in a more or less horizontal direction. Bilateral compression never results in a fracture which runs at right angles to the axis of compression, for the fracture passes always directly between the two compressed areas, modified only by the varying resistance offered to it in its transbasic course. In bilateral compression, also, a "bursting" fracture of the vault, the vault being the only "*convexity*," is never seen. If a vault fracture be present it is seen merely as a fissured fracture extending up from the region of the applied force and gradually tailing off towards the summit of the vertex. Further, I shall show that the lines of fracture proceed across the base always in the direction of the applied force, modified again only by the resistance offered by the stronger and weaker basic regions. These facts, and my own experience, render, in my opinion, the above theories quite untenable.

3. "*Contrecoup*" *theory*.—Fractures of the base alone are occasionally seen with direct evidence that the blow was received on the vault. Such cases have given rise to this theory which states that from the point struck a wave is transmitted through the semifluid brain, producing a fracture at some more distant point. Helferich, for instance, maintains that isolated fractures of the orbital roof, and more rarely of other parts of the base are produced by the influence of hydrostatic pressure. This theory is opposed to all experience in the mechanism of basic fractures and the peculiar fractures brought forward as examples are capable of a simpler explanation. The base being undoubtedly the weakest part of the skull fractures in this situation, when extending from the vault, frequently show greater comminution in the basic region than in the vault. A blow on the vault, therefore, may not suffice to produce a local fracture and yet the forces, when transmitted to any specially weak basic area, may there be strong enough to produce a fracture. Such specially weak basic areas are supplied by the orbital plates of the frontal bones and by the thin cerebellar fossa walls. In proof of this it is merely necessary to state that it is a common occurrence to find that as the result of a blow on the vertical frontal plate the orbital plates are comminuted, the vertical plate remaining uninjured, or at most the seat of a small fissured fracture. I show on the screen two cases, one a fracture of the cribriform plate of the ethmoid without any fracture of the vertical plate of the frontal bone, and the other a fracture of the posterior fossa which passed across the foramen magnum and tailed off on the dorsum ephippii, the resistance offered being too great. The forces, however, when conducted to the thin right orbital plate, still retained sufficient energy to produce a comminuted fracture in that region. It will here be in place to draw attention to the extreme friability of the orbital plates of the frontal bone, whilst the upward convexity of the orbital roof probably accounts for the fact that when that area is comminuted the fragments are practically always displaced upwards, the peri-orbital fat projecting through the gaps into the cranial cavity.

To arrive at any definite conclusions with regard to the mechanism of basic fractures it is necessary always (1) to take a careful history of the accident so as to determine in what manner the injury was received and also what part of the skull was struck; and (2) to compare the result obtained with all visible external signs of injury. A careful examination of a large number of cases of fractures of both vault and of base showed that in from 30 to 40 per cent. of cases the evidence was clear that the basic fracture resulted from, and extended from, a severe vault fracture. These cases are therefore examples of Aran's "irradiation" theory. This theory, however, further states that the fracture follows the shortest anatomical route to the base, whilst such is not the case, as (1) the line corresponds to the direction of the initial force, and (2) the line of fracture is markedly influenced by the resistance offered to it in its basic course, picking out, usually, all the weaker spots and avoiding the stronger, and it is only in the most severe cases that a fracture surmounts all obstacles and proceeds to the base directly in the line of the applied force. In over 60 per cent. of cases the injury was received (1) in front, over the lower frontal region, supra-orbital ridges, and external angular frontal process; (2) at the sides, over the auricular and mastoid region; and (3) at the back, over the region of the superior curved line of the occipital bone and the occipital protuberance. In all these cases, therefore, the injury was inflicted at or near the level of the base of the skull. The resultant fracture in all these cases was therefore a basic fracture by direct violence, the fracture passing inwards across the base and splitting the base in the same way as a chisel splits a board of wood, the grain of which may be regarded as representing the weaker lines and any intervening knot as representing the resistance offered by any strong bony buttress, momentarily turning aside the force which again later passes onwards, parallel to the original direction, but not necessarily in the same straight line. A blow in this region will tend primarily to involve the weaker area, the base, and secondarily to extend upwards on to the vault, many of the fractures in which situation result as extensions from blows delivered around the basic circumference. The statement, therefore, that all basic fractures result as extensions from the vault (Aran) is analogous to putting the cart before the horse, since many of these vault fractures result as extensions from the basic region.

There is still, however, another very important anatomical fact to consider and one which must necessarily exercise great influence on all basic fractures which result from falls or blows on the lateral aspect of the head and in most fractures produced by bilateral compression. The skull may be regarded as consisting of two parts, one part lying anterior to the condyles and the other posterior to, and including, the condyles, this latter part, owing to the vertebral attachment, being firm and fixed. As the result of a blow on the antero-lateral region of the head this anterior segment tends to be split off from the more fixed posterior part. If, again, in a fall from a height the post-mastoid region should strike the ground there is in that region a rebound force which acts in the opposite direction, whilst the anterior segment momentarily travels in the original direction; the two segments are consequently influenced for a brief period by forces acting in opposite directions with the inevitable result that they tend to be split one from the other. It is now necessary to point out that between the two segments there exist an exceedingly weak line, this line passing from one external auditory meatus to the other, involving in its course both middle ears, both petro-sphenoidal sutures, with the sphenoidal sinus as a connecting link in the middle line (Fig. 1). Such a fracture, as is indicated in the illustration, exemplifies a common and typical basic fracture and one which is most frequently seen when the accident is the result of a fall from a height. It is usual to find that the fracture extends up, on one or on both sides, on to the vault and occasionally this vault extension is so marked that the whole skull is practically divided into two parts, merely united by soft structures. More than once I have been able to elicit crepitus on the cadaver by rubbing the anterior and posterior segments together.

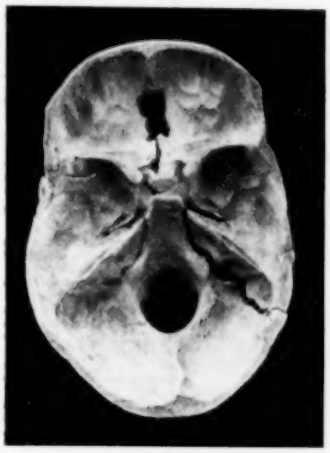
Collecting now the facts, so far as I have gone, I am of opinion: (1) that the bursting and compressing theory and the contrecoup theory are both untenable; (2) that Aran's irradiation theory, with certain modifications, accounts satisfactorily for those basic fractures which result from blows on the vertex; and (3) that most basic fractures result from forces applied directly around the basic level and that these fractures are the result of a splitting force, the line of fracture tending to travel across the base, parallel to the original direction, but not necessarily in the same straight line. It now remains to consider other factors which may exercise great influence on the actual direction of the fracture.

1. *The influence of sutures.*—Complete maceration of the skull is always necessary in estimating how far the various sutures of vault and base are affected in severe head injuries, for the dura mater, dipping down in these situations, usually completely obscures the lesion unless the degree of separation is marked. This injury is generally regarded as of rare occurrence and it is said by Morgagni to be most prevalent in the young. An examination of a large number of macerated skulls shows, however, (1) that separation along certain sutural lines is very common; (2) that this separation is most common in middle life; (3) that not only does

a suture tend to deaden a force, but if a suture lies in the path of a fracture, the forces tend preferably to follow that suture, even though the original direction may be slightly altered in so doing; (4) that in the more simple sutures the separation follows exactly the irregular sutural line, whilst in the more intricate sutures the line of separation passes along the suture, regardless of the finer dentations; and (5) that sutural separation, without any further basic lesion, is possible but of rare occurrence. The masto-occipital, petro-occipital, and lambdoid sutures are most commonly implicated.

2. *The influence of the air sinuses.*—(*a*) The sphenoidal sinus, formed by the hollowing out of the body of the sphenoid, varies greatly in size. In the great majority of cases it extends backwards nearly as far as the occipito-sphenoidal junction, whilst laterally it is separated by a thin plate of bone from the cavernous sinus. The roof and floor are usually paper-like in density, whilst the latter also assists in the formation of the naso-pharyngeal roof. The sinus, therefore, is bounded on all sides by a mere shell of bone and consequently there exists in the very centre of the base an exceedingly weak area, an area, therefore, which would naturally be involved in a very large proportion of all basic fractures. From my own experience this sinus was involved in 70 per cent. of cases, the comminution of roof and floor being in some cases so excessive that a large probe could be passed from the naso-pharynx into the cranial cavity so affording free means of ingress to micro-organisms (Fig. 2). Severe hæmorrhage may result from concomitant

FIG. 2.



Showing an extensive fracture of the sphenoidal sinus.

injury to the cavernous sinus and to the internal carotid artery, with furious bleeding into the naso-pharynx and nose. The illustration shows the great liability of the sinus region to injury, as (1) all fractures from one middle fossa to the other pass across the sinus (Fig. 1); (2) all fractures from one middle to the opposite anterior fossa also involve this region; and (3) most fractures of the anterior fossa or of the middle fossa tend to terminate in the sphenoidal body.

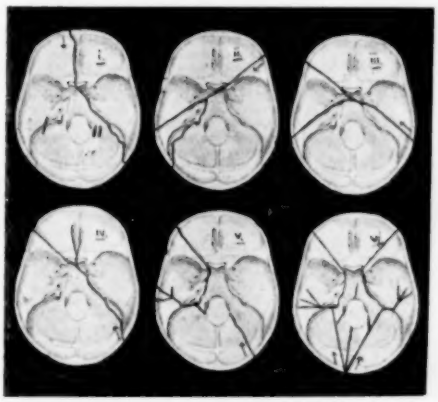
(*b*) Up to the age of puberty the frontal sinus is either absent or represented merely by a small air-cell, but after puberty it develops rapidly in size and extent. This fact is of importance in estimating the gravity of a fracture in the supra-orbital region at the different ages. The two sinuses are also generally asymmetrical and not infrequently the sinus extends far backwards into the orbital roof. The inner boundaries are often exceedingly thin and friable, whilst the outer wall consists of fairly dense bone, and consequently a fracture of the outer wall is almost invariably accompanied by a more severe and frequently comminuted fracture of the inner wall, or, in other words, by a fracture of the anterior fossa. The more prominent immediate resulting symptoms are: (1) hæmorrhage into the orbit and eyelids; (2) hæmorrhage into the nose; and (3) traumatic emphysema from the escape of air into the surrounding tissues, secondary to injudicious blowing of the nose, &c. The air in the cellular tissues may spread widely over the vault and face and into the retro- and peri-orbital tissues, with great swelling of the eyelids and proptosis of the eye. When localised the condition is known as "traumatic pneumatocele."

With regard to later complications it must be borne in mind that the more extensive fracture of the inner wall affords a mode of ingress for septic organisms with resultant extradural abscess or meningitis. It is therefore advisable when suppuration in the external wound occurs to chisel away or to trephine a portion of the outer limiting wall in the most dependent part in order to establish free and thorough drainage, the normal channel of exit into the middle meatus of the nose being usually blocked by swollen and lacerated mucous membrane or by blood clot. Unless some such treatment is adopted empyema of the sinus will probably result and death ensue from direct meningeal infection.

The auditory region.—I shall discuss later the great liability of this region to injury and will merely state here that this weakened area is involved in the great majority of middle fossa fractures. The exact lines of the fracture, the resultant hæmorrhage, the involvement of the seventh and eighth nerves, and other features will all be alluded to under their separate headings.

The basic foramina.—Battle, the only authority on skull fractures who enters into detail with regard to the influence of the foramina on the direction of a fracture, states that "the line of fracture is usually arrested if it meets with one of the foramina in its course, especially if the foramen be a large one." A careful examination of macerated skulls shows, however, that this view is erroneous; Fig. 1 illustrates three separate cases, chosen from numerous others, in which the fracture after reaching the margin of the foramen magnum was again continued on the other side of the foramen. The fracture, after traversing the thin cerebellar fossa, usually strikes the foramen magnum just posterior to the condyle and starts again at a corresponding point behind the opposite condyle, tending then to pass onwards parallel to the original direction but not in the same straight line. More rarely a fracture on reaching the foramen magnum is continued on the opposite side in the same straight line. This condition is, however, exceptional and I have only met with two such cases, both of which are shown in the illustration. Turning from this foramen to others it is exceedingly common to find fractures traversing the foramen lacerum anterium, the foramen lacerum medium, or any other foramen that may lie in the chosen paths of basic fractures. Having now drawn attention to some of the more important anatomical features which exercise greater or lesser influence on the direction of a basic fracture, I will point out that by a careful comparison of the direction of the applied force and the point of application it is possible in the greater number of cases to arrive at conclusions guiding one in estimating the probable line of fracture in any given case (Fig. 3).

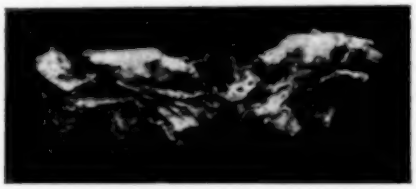
FIG. 3.



Showing lines of forces as applied and the direction of fractures resulting therefrom.

Direction, &c., of the Applied Force.	*Resultant Fracture.*
i. Force applied to median frontal region.	The fracture passes backwards from the perpendicular plate of the frontal bone to the cribriform plate of the ethmoid, thence between the optic foramina to the body of the sphenoid, the thin sinus roof being usually comminuted. From there the fracture diverges to the opposite side, and tearing off the posterior clinoid process passes along the petro-occipital suture to the jugular foramen, being again continued on the other side of that foramen along the masto-occipital suture, and so again to the vault.
ii. Force applied to the lateral frontal region, in the situation of the external angular frontal process.	The fracture passes across the anterior fossa towards the sphenoidal fissure, tearing away the anterior clinoid process, and again comminutes the roof of the sphenoidal sinus. Progressing onwards the posterior clinoid process is torn away and the fracture then passes either along the anterior part of the petrous bone at its junction with the greater wing of the sphenoid towards the opposite middle and external ears, or along the petro-occipital suture to the jugular foramen and continued along the masto-occipital suture, as in the previous case.
iii. Force applied to the region of the external ear.	The fracture passes across the roof of the bony auditory meatus towards the junction of the anterior and inner walls of the middle ear, the membrane and ossicles undergoing a varying amount of destruction and displacement. The fracture is then continued across the tegmen, which is in most cases more or less comminuted, and after following the region of the petro-sphenoidal suture it reaches the foramen lacerum medium, being continued again on the opposite side of that foramen to the sphenoidal body. Thence it pursues one of two courses. Most commonly the fracture passes obliquely backwards to the opposite middle and external ears, following a course similar to that already indicated. (Fig. 4.)

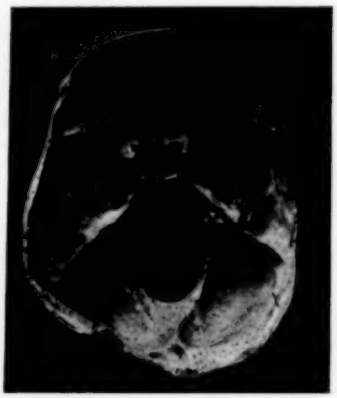
FIG. 4.



Showing portion of the base of the skull with a fracture involving both auditory regions.

	In such cases the basic fracture may extend on each side up on to the vault in such a manner that the two segments are merely united by soft parts and an examination of the anterior aspect of the posterior fragment reveals further that the fracture passes just anterior to the geniculate ganglion of the facial nerve, which ganglion usually lies exposed. Its petrosal branches are, however, generally torn. The fracture also passes anterior to the Eustachian tube and anterior to the horizontal part of the internal carotid artery. In passing from without inwards, therefore, the following structures are to be noticed on the anterior aspect of the posterior fragment; the posterior half of the external auditory meatus, the mastoid antrum, the lacerated membrane and ossicles, the posterior two-thirds of the middle ear, the geniculate ganglion of the facial nerve, the Eustachian tube, the horizontal part of the internal carotid artery, the Gasserian ganglion, and the posterior part of the sphenoidal sinus in the middle line. After reaching the sphenoidal body, the alternative course for the fracture to pursue is to pass towards the opposite sphenoidal fissure, and tearing off the corresponding anterior clinoid process, to pass onwards across the anterior fossa, parallel to the original direction but not in the same straight line.
v. Force applied to the mastoid region.	The fracture follows the occipito-mastoid suture to the jugular foramen, and is again continued on the opposite side of this foramen, following the petro-occipital suture towards the apex of the petrous bone. Tearing off the posterior clinoid process, the fracture now passes across the sphenoidal body to the sphenoidal fissure of the opposite side, and so across the anterior fossa, parallel to the original direction. It is especially common in this particular variety of fracture to find fissures diverging from the region of the sphenoidal body forwards towards the cribriform plate the fissures passing mainly between the optic foramina and not usually directly involving those foramina. This fracture is also peculiar in so much that when the degree of separation along the occipito-mastoid suture is excessive there is a special liability to a tearing of the dura mater with injury to the sinus wall just as the sinus begins to dip downwards and inwards. (Fig. 2.)
v. Force applied to the lateral occipital region.	The fracture passes across the thin cerebellar wall, usually leading to some degree of comminution, and strikes the foramen magnum just posterior to the condyle, starting again at a similar position on the other side of the foramen and passing to the outer margin of the jugular foramen (Fig. 5). Two courses, again, are now available, for the fracture may either cut across the body of the petrous bone, external to the internal auditory meatus, finally comminuting the roof of the middle ear, or else the fracture may be continued from the inner part of the jugular foramen along the petro-occipital suture towards the apex of the petrous bone and the foramen lacerum medium. It usually then involves the corresponding sphenoidal fissure and passes across the anterior fossa, parallel to the original direction.

FIG. 5.



Showing fracture passing through cerebellar fossa.

vi. Force applied to the posterior occipital region.	The resultant fracture varies according to the direction of the applied force. A force when applied to the posterior occipital region at right angles to the transverse axis of the skull results in a fracture which, on reaching the posterior margin of the foramen magnum, is continued on again on the opposite side of the foramen along the dorsum ephippii. When the force is more oblique in direction the fracture traverses the thin cerebellar fossæ to the outer margin of the jugular foramen and then follows one of the two courses indicated in the previous case. More commonly the fracture cuts across the petrous bone. An offshoot is frequently seen which passes to the foramen magnum just posterior to the condyles. The cerebellar wall is frequently comminuted and the lateral sinus may be torn in the line of the fracture.

Basic fractures, therefore, follow certain definite paths, the transbasic course varying according to the direction of the applied force and the point of application. These plans were worked out in the post-mortem room and were subsequently put to a practical use with the result that a correct diagnosis as to the path of the fracture was made in almost every case. It must be, however, clearly understood that the extent of the fracture, whether it completely traverses the base from side to side or not, depends on the amount of force used and the resistance offered, for bases, as well as vaults, vary greatly in density. To every rule also there must be exceptions and occasionally one may find some peculiar basic fracture which seems to follow no rule, whilst

in other cases the force may be so excessive that the fracture crosses the base regardless of all obstacles. I venture to assert, however, that the lines of fracture indicated will in the great majority of cases be found to be correct. Finally, with regard to fractures produced by bilateral compression the line of fracture always tends to run between the two compressed areas, modified only by the relative strength of the intervening areas.

Fractures of the vault.—Fractures of the vault may be limited to that region or they may coexist with a basic fracture. Evidence has been brought forward under "fractures of the base" to show that in the latter class of cases the vault fracture frequently results as an extension upwards from the basic circumference. Whether, as the result of a blow on the vault, the fracture remains limited to that region or extends downwards also to the base depends mainly on the degree of force used and the direction in which that force is applied. The greater the force the greater is the tendency to vault limitation, whilst, on the other hand, a force applied obliquely downwards on to the skull surface usually results in an extension towards the basic area, not, however, following the shortest anatomical route to the base, as Aran indicated, but guided to the base by the direction of the applied force and by the resistance offered to it in its course. The fracture passes preferably between the various bony buttresses which pass up from base to vault, except in those cases where, owing to greater violence, it passes to its termination regardless of the obstructions which may lie in the path. Lastly, fractures of the vault, produced by falls from a height on to the summit or on to the side of the head, are usually complicated by a concomitant basic fracture, the weight of the falling body being transmitted through the condyles, greatly influencing the extent and direction of the forces acting. The varieties of vault fracture are of such text-book prominence that I propose to confine myself to three points only.

1. *Fractures of the external table*.—The possibility of a fracture of the external table without any injury to the internal table was up to recent years a matter for dispute. The late war in South Africa has, however, conclusively proved the existence of such a fracture. This "gutter-shaped" fracture usually results from a glancing or spent bullet. Such fractures are, nevertheless, of such rare occurrence and of such difficult diagnosis that they form no exception to the rule that exploration and trephining should be carried out when there is any suspicion that a more extensive injury to the internal table may also be present.

2. *Fractures of the internal table.*—"When a foreign body passes completely through any part of the skull—it matters not what the direction may be—the aperture of exit is always larger than the aperture of entry." Such was the law enunciated by Teevan in 1864 and explained by him as follows: "The aperture of entry is caused by the penetrating body only, whilst the aperture of exit is larger, inasmuch as it is made by the penetrating body plus the fragments of bone driven out of the proximal table and diploe." Previously to this theory the explanation offered was that the internal table was the more brittle. Teevan proved that this was not the case as by firing a bullet from inside the skull the wound of exit was again greater than the wound of entry. It was also proved that whether the inside or the outside of a skull be struck fracture of the distal table only, without any injury to the proximal table, can be produced in either case. This is, as Teevan pointed out, in obedience to the law that "when pressure is applied to a body, when it breaks the fracture commences on the line of extension, not that of compression." Fractures of the internal table are most common and most extensive in those regions where the diploic tissue is most abundant—e.g., the mid-parietal and anterior frontal regions. Too much stress, therefore, cannot be laid on the fact that (1) fractures of the internal table only may exist without any visible or palpable injury to the external table; and (2) that when the external table is fractured there is in nearly every case a more extensive fracture of the internal table. The depressed internal table may give rise to many complications, of which the following are the more important.

(1) *Immediate.*	(2) *Remote.*
A. Injury to the membranes, venous sinuses, and meningeal arteries.	*A.* Meningeal thickening, chronic cerebritis, and arachnoid cysts, with consequent localised cephalalgia, Jacksonian epilepsy, and insanity.
B. Injury to the brain substance.	*B.* Meningitis, cerebral abscess, &c. (when compound).

Some of the complications and the question of treatment will be alluded to later.

3. *Explosive fractures.*—The passage of a bullet through the brain leads occasionally to such intracranial disturbance of the fluid and more solid contents that the resultant explosive force, combined with the forces acting on the skull from the impact of the bullet, produces a peculiar fracture which I may call an "explosive fracture." More commonly the sutures give way, especially along the line of the sagittal suture, but in more rare cases the vault may be more or less completely lifted off from the base. This unique specimen which I show you is an example of this latter variety. The bullet, fired from a pistol held close to the right temporal region, passed through the brain and impinged against the opposite parietal region, producing an "elevated" fracture, the external table being more extensively damaged than the internal. In spite of an abnormally massive skull an irregular fracture extended completely round the skull, except for about two and a half inches in the right occipital region, lifting the vault from the base like a trap-door. There was no basic fracture. (Fig. 6)

FIG. 6.

Explosive fracture caused by a pistol-shot in the right temporal region.

Fractures in children.—In comparing a child's skull with that of the adult it can at once be seen that there are certain peculiarities in the former which must influence the direction and the extent of a fracture. 1. The bones of the vault are elastic and pliable and consequently a blow may lead to a bending-in, temporary or permanent, without any actual fracture. Dense fibrous tissue also intervenes between the bones, tending to limit the fracture to the bone struck, extensions to the basic regions being comparatively rare. 2. The diploic tissue is practically absent and consequently fractures of the internal or external tables only are almost unknown. 3. The air sinuses are non-existent or small. It is especially important to bear this in mind in estimating the gravity of severe fractures in the anterior frontal region. The greater adherence of the dura mater in the child is said to prevent the formation of any extensive extradural clot. There can be no question that middle meningeal hæmorrhage in children is rare, but I put this down, not to the supposed greater adherence of the dura mater, but to the fact that, owing to the elasticity of the skull and the absence of bony spicules from the internal table, the artery usually escapes laceration, being more commonly pushed aside or compressed. Bruising and superficial laceration of the brain are, however, relatively more common in children than in adults, owing to the greater delicacy in structure of the arachnoid, pia mater, and cortex. A comparatively slight blow leads consequently to subpial and subarachnoid hæmorrhages, resulting in violent convulsions when situated over the Rolandic area. Fractures

of the base, though obviously of less frequent occurrence, in their direction and extent follow the rules already put forward under "fractures in adults." The presence of the petro squamous suture makes more grave the prognosis of a fracture, involving the middle ear and being followed by suppuration.

Relative frequency of fractures of the anterior, middle, and posterior fossæ.—A basic fracture may be limited to one fossa only or all three may be involved at one and the same time, whilst in rare cases the anterior and posterior fossæ may be fractured, the intervening middle fossa remaining uninjured. Fractures implicating the anterior and middle fossæ are almost invariably accompanied by definite symptoms, rendering the diagnosis fairly certain, whilst fractures of the posterior fossa are frequently overlooked owing to the absence of definite clinical symptoms, and it is of common occurrence to find at the post-mortem examination a fracture in this situation the existence of which had not previously been suspected. It is probable that fractures of the middle fossa are the most common and fractures of the posterior fossa the most rare.

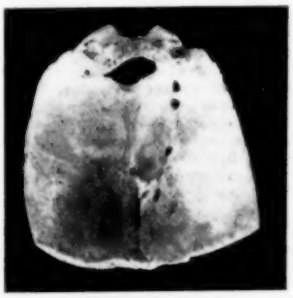
Mortality according to the fossa implicated.—In endeavouring to estimate the mortality according to the fossa implicated the same difficulties arise owing to the uncertainty of the diagnosis of posterior fossa fractures. There are, first of all, dangers peculiar to each fossa. 1. Anterior. Septic infection from the nose, ethmoid cells, &c. 2. Middle. Septic infection from the naso-pharynx and ear, injury to the middle meningeal and internal carotid arteries. 3. Posterior. Injury to the venous sinuses. Fractures of the middle fossa, therefore, are the most dangerous from local complications. There is, however, a grave complication which is common to all fossæ, injury to the brain itself, and since the vital centres are grouped posteriorly in the region of the fourth ventricle the prognosis of fractures of the posterior fossa is correspondingly rendered more grave. Probably the mortality increases from before backwards, fractures of the anterior fossa being certainly the least dangerous, with but little to choose between a fracture involving the middle fossa and one implicating the posterior fossa. The general mortality as given by different authorities does not vary very much. Battle from 168 cases puts the general mortality at 32 per cent. This is, according to my experience, too low, for in 215 cases 89 died and 116 recovered. The mortality equalled 44 per cent. Fractures of the base occur at all ages of life, the death-rate being highest at the two extremes of life, from 50 to 60 per cent. under the age of five years, and from 60 to 70 per cent. after the age of 70 years.

Mortality of vault fractures, with and without depression.—The general mortality of vault fractures, with or without depression, is from 20 to 25 per cent., the death-rate now being lowest in children and highest in old age.

There are still some surgeons who refuse to believe that a patient can recover from a severe basic fracture. Clinical experience, however, shows again and again that even after the most extensive injuries patients may completely recover, and this is especially the case in young adults. As an example I will briefly narrate one case. A boy, aged 15 years, was hanging by his feet from a wharf when a barge, swinging inwards, crushed his head against one of the piles. When admitted he was collapsed and pulseless and bleeding profusely from both ears, from the nose, and from the mouth. Both tympanic membranes were lacerated at the upper and anterior part and subsequently marked facial paralysis was seen on one side. One pupil was widely dilated and the other was contracted to a pin-point, and added to this there was marked internal strabismus of one eye with proptosis. In spite of all these troubles the boy made a rapid recovery, all symptoms disappearing except the squint. A more typical picture one could not desire and the symptoms all indicated one of the most severe basic fractures—that fracture which I call "the typical basic fracture"—as it undoubtedly passed from one auditory meatus to the other (Fig. 4), involving both middle ears and the sphenoidal sinus in the middle line. The line of fracture passed just in front of the genu of one facial nerve and from the sphenoidal region there was an extension forwards to the sphenoidal fissure, thus accounting for the orbital symptoms. The sixth nerve was probably injured, as it laterally grooves the dorsum ephipoii and, as I shall point out under "nerve implication," injuries of the sixth nerve in that situation frequently lead to a permanent paralysis.

Though there are but few who refuse to believe in the possibility of recovery in such cases, yet there are many who regard a posterior fossa fracture as necessarily fatal. Such a view is hard to refute by a mere recitation of cases, since these fractures are conspicuous by their lack of clinical symptoms. The illustration, however, is that of a united fracture of the posterior fossa and it exemplifies well certain peculiarities common to all united basic fractures (Fig. 7). The new bone formation is poor in quality and

FIG. 7.



A united fracture of the base of the skull.

in quantity, being rough and porous and almost limited to the inner aspect of the skull. On the outside the fissure remains quite definite, the edges being slightly rounded off with scattered bridges of new bone formation. The dura mater is generally firmly adherent to the rough new bone and also thickened and discoloured.

The medico-legal aspect of skull fractures.—The next illustration is of great interest on account of its medico-legal importance. The man from whom the specimen was obtained was seen by several witnesses to commit suicide in a state of suicidal frenzy by striking himself repeatedly on the vertex of the skull with a dumb-bell. The evidence of repeated blows is borne out by the appearance of the vault. A central hole, nearly circular in shape, is surrounded by numerous semicircular dents and fissures, showing that several blows were inflicted (Fig. 8). Those fragments which were

FIG. 8.

A fracture of the vertex of the skull from repeated blows.

not driven into the brain were torn out by the patient before he became unconscious. The greater destruction of the internal table is also of interest. The position of the fracture, the evidence of repeated blows, and the nature of the implement used would in the absence of reliable witnesses have been sufficient to lead to a verdict of "wilful murder."

Two other cases of equal medico-legal interest are reported by Mr. R. Withers of Plymouth. The first case was that of a

man who was admitted into the Tuapeka Goldfields Hospital, New Zealand, 25 years ago, suffering from a comminuted fracture of the frontal bone, exposing the dura mater. He was found unconscious in a hut with a blood-stained tomahawk lying by his side. His mate was arrested, but fortunately for him the injured man recovered consciousness after ten days and made the following statement. Having collected sufficient gold he had been deputed by his mate to get stores from the nearest town. There he had spent the money in a prolonged debauch and on his way home an angel appeared to him and pointed out to him the iniquity of his conduct in thus defrauding his mate. In consequence of this and in order to expiate his offence, on his arrival at the hut he knelt down on the floor and proceeded to smash in his forehead with the butt end of the tomahawk, continuing his efforts till he lost consciousness.

The second case was that of a Kanaka on a sugar estate in Australia. This man was found lying in the hut of another Kanaka with his forehead crushed in and a hatchet beside his body. He remained insensible for several days but eventually recovered and stated then that his injuries were self-inflicted and that he went to the other man's hut so that suspicion of murder should rest upon him.

ON THE USE OF DR. MARMOREK'S ANTITUBERCULOUS SERUM.

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EARLY in December last I was so much impressed by Dr. Marmorek's arguments against tuberculin being the real toxin in tuberculosis and by the value of his evidence that the new toxin, by means of which his antitoxic serum is prepared, is the true toxin, that I asked him for a supply of this serum in order that I might investigate its value upon selected cases at St. George's Hospital and at the Brompton Hospital for Consumption. Dr. Marmorek not only gave me a free supply of the serum but came over from Paris on three occasions in order that I might have the benefit of his advice.

At the commencement of this investigation Dr. Marmorek expressly stipulated that the serum should only be given to severe or to urgent examples of the disease. "If," he said, "you find in these cases, as I have found, that the serum does no harm, and still more if you find you are able to ameliorate the symptoms and diminish the extent of the disease, then you will be justified in extending your investigation to cases in which the disease is less severe and in which the prognosis is more hopeful." This unusual attitude was no doubt the most scientific one to adopt but it necessarily somewhat increased the difficulties with which one has to contend in an investigation of this kind. My experience is limited to some 30 severe cases and extends over a period of three months; consequently it is premature for me to give a decided opinion as to the value of the serum. I have, however, gladly consented, in deference to Dr. Marmorek's express wish, to give the general impressions I have formed of this new treatment up to the present time. And although I cannot bring forward any indisputable evidence that the serum is capable of producing what is termed a cure of tuberculosis my experience of the necessary technique, of the dosage and action of the serum, and of the complications which sometimes occur, may be of value to the profession at the present moment, for there can be little doubt that, in virtue of the paper recently read by Dr. Marmorek at St. George's Hospital,[1] an extended trial of the value of the serum will now be made in this country.

The difficulties of forming a trustworthy judgment in the investigation of a new remedy in a disease which presents such a changing picture as tuberculosis must be borne in mind. In the first place, we have not much experience of the effects of horse serum when it is used during a period of several months. Consequently, we are, to a certain extent, ignorant of the effects which should be properly attributed to the serum and not to the antitoxin. There is in addition the difficulty which is always present in the treatment of tuberculosis, the difficulty experienced in differentiating between *post* and *propter*, when we try to estimate the value of our remedy. For example, two patients to whom I refused the serum developed pneumothorax within a week and rapidly succumbed. In another case, in which I postponed my decision, there was an acute exacerbation of the disease a few days later with a fatal result. In another instance Dr. Marmorek put off the first injection from a Saturday to the following Monday; the patient, however, succumbed to profuse hæmoptysis on the intervening Sunday. In all these cases if the serum had been used an adverse judgment of its value might have been formed. Again, no one who has not had an experience of this kind can realise the difficulty there is in obtaining suitable cases when one wishes for them. Naturally, all my patients had the treatment explained to them and were asked for their full consent. A proportion of patients refused their consent; others who consented would not persist with the treatment for a reasonable time. Others again could not support the serum. Finally, there was the difficulty of determining the general technique and the most suitable dose of the serum.

THE TECHNIQUE.

The serum is injected under the skin. As a rule I have injected it into the abdominal wall; some patients, however, prefer to have the injections made under the skin of the back, of the axilla, or, in the case of men, of the arm. In surgical cases it is possible that the serum may be more beneficial when injected somewhere in the neighbourhood of the lesion. For the first injection the skin is prepared as if for a surgical operation and the puncture made by the needle is closed with collodion. If an extensive preparation of this kind is made for each injection the skin soon becomes sensitive. Consequently, after the first injection we have covered the selected area with cyanide gauze and then for each subsequent injection contented ourselves with swabbing the skin with some antiseptic before using the needle. That this procedure is sufficient is shown by the fact that no sepsis of any kind has followed the injections given in the cases which have been under my care. These injections amount to over 450 in number. Successive injections should not be made in the immediate neighbourhood of previous ones. Too much collodion should not be used in closing the puncture made by the needle as this substance may set up some irritation of the skin. The syringe and needle are naturally sterilised before use, preferably in an autoclave. I employ a separate needle for each case and have each needle thoroughly sharpened every day before sterilisation. This is an important point for the comfort of the patients in a long series of injections.

The serum is supplied in bottles of varying size and it frequently happens that some serum is left in the bottle after the required amount has been withdrawn. In order to prevent the contamination of this the following procedure is adopted. The cork and the neck of the bottle are sterilised by being passed through a spirit flame; the cork is then withdrawn by pressing it to one side and not by a revolving or corkscrew action. The required amount of serum is drawn into the syringe; the cork and the neck of the bottle are again sterilised and the cork is reinserted. The serum should be kept in a cool place but not on ice. If the serum becomes cloudy or if it is definitely blood-stained it should not be used. Dr. Marmorek prefers to give the serum in the morning between 9 and 11 o'clock.

With regard to the dose, in chronic cases we at first gave ten cubic centimetres every day for seven, eight, or nine days. This series of injections was followed by a period of intermission lasting a week or ten days. At the end of this period the serum was given in five cubic centimetre doses for two days and in six cubic centimetre doses for a further two days. After one day of intermission seven cubic centimetre doses were now given on two days. Eight cubic centimetres were given on the next day, and nine cubic centimetres on the final day of this series. A further week or ten days were allowed to elapse and a third series similar to the second was then given, and so on. These doses, however, were too large and too frequently led to serum effects. We now use five cubic centimetre doses for four consecutive days, followed by a period of three days' rest. A second and third series are then given of the same dose and with

[1] THE LANCET, March 26th, 1904, p. 884.

the same period of intermission. When the third series has been given the next period of intermission should in most cases last at least two weeks. My later experience tends to show that patients sometimes begin to improve during these periods of intermission, whilst they may show no improvement if the serum is pressed too hard. No definite rule can be laid down, however, in this matter as individuals show such a varying capacity for supporting the serum. Some patients have received a large amount of serum in a comparatively short period of time and have shown no serum reaction whatever—such as rashes, tenderness, enlargement of glands—whilst others are unable to support three consecutive doses of five cubic centimetres. Some cases can only support the treatment when the injections are given every other or every third day. The main thing to watch in fixing the dosage for a particular case is the capacity of the individual to support the serum. In all cases it is important to have periods during which the use of the serum is discontinued. These periods of intermission, again, must vary in individual patients. For example, if a patient shows definite serum effects such as a rash, &c., after four days' injection the period of intermission should be longer than in a case in which a patient shows no such reaction.

In acute cases and, as far as my experience goes, possibly in surgical cases larger doses may be given. In acute disease, such as meningitis, as much as 30 cubic centimetres in divided doses may be given every day for four or five days, the dose being then gradually diminished. I have given a child five years of age 30 cubic centimetre doses for four days without harm. In adult surgical cases from eight cubic centimetre to ten cubic centimetre doses appear to be frequently well borne.

SERUM EFFECTS.

By these I mean certain results which may be attributed to the horse serum and not to the antitoxin. A certain proportion of individuals are unable to support this serum just as others, even healthy men, are unable to support anti-streptococcic or plague serum. In such cases there may be a rise of temperature, a feeling of malaise, some tenderness about the seat of injection, enlargement and tenderness of the neighbouring glands, neuralgic pains, development of various rashes, and, in rare instances, affections of the joints. In every case if the dose of serum is pushed too far these phenomena, or some of them, may present themselves. In many instances 10 cubic centimetre doses cause a rise of temperature in chronic cases. The temperature usually falls again when the injections are omitted. In certain instances this rise of temperature does not occur until after the injections have been discontinued, showing a certain cumulative effect of the serum. In two cases this rise of temperature has persisted for some weeks. It may be said that in both these instances the serum did harm. One of these cases was converted from the apyrexial type to the pyrexial type. In this case blood-stained serum was given and this I have now learnt should never be employed. In the other case, which was one of great severity, the patient supported the serum badly and we used what we now know to have been too large doses. Now that we use smaller doses we meet with this rise of temperature exceptionally and not to the same extent. If such a rise of temperature (to from 101° to 103° F.) occurs, then, in view of my experience, the use of the serum must be stopped and only tentatively renewed some days after the temperature has declined. By carefully watching the temperature it is sometimes possible to anticipate the cumulative action of the serum. When this occurs the injections should be temporarily suspended.

The rashes which make their appearance are the ordinary serum rashes—i.e., urticaria, erythema, and scarlatiniform eruptions. These may occur after three or four injections and are most common after eight or nine consecutive injections. They may occur within a few hours of an injection or they may occur some days after the injections have ceased. The commonest is an erythema about the seat of injection which as a rule may be neglected, save as a signal that the series of injections may soon have to be interrupted. When there is a general erythema or urticaria with coryza and a rise of temperature the injection must be omitted for a varying period, usually for a week. In some instances of this kind there is but little feeling of malaise and in yet others, although the temperature is appreciably raised, there is little alteration in the number of pulse beats or of respirations. In some cases, simultaneously with the rash, the patient suffers from a feeling of "pins and needles" in the limbs; this sensation may be followed by definite neuralgic pains. In one case there were swelling and tenderness of one of the finger-joints; this, however, lasted only three days. In a certain proportion of cases, more especially when the injections have been numerous, there is considerable œdema at the seat of injection. The œdema may be quite hard, is sometimes painful, and may last for a considerable time; in many instances, especially if there is no pain, this condition need not cause the injections to be interrupted.

Again, in three instances in which I gave doses of ten cubic centimetres for some time at the commencement of this investigation the patients became drowsy and listless. These symptoms pass off as soon as the serum is discontinued. In two or three instances there has been a certain amount of vaso-motor disturbance a few minutes after the injection and one patient fainted and became collapsed after the nineteenth injection of five cubic centimetres of the serum

THE ANTITOXIC EFFECTS OF THE SERUM.

As I have already said, my experience is not yet sufficient to justify me in giving any definite opinion on this point. It is, however, already clear that the serum has its limitations. We cannot expect to obtain any permanent relief by its use in a large number of cases in which there is extensive disease of some years' standing or in cases in which there are marked excavation and secondary infection. In some instances of this class of case which I have treated the disease has made steady progress during the time the injections have been given. In the majority of instances, however, my patients have expressed a definite opinion that they feel more comfortable for the injections. In three cases out of the six treated of surgical tuberculosis the pain and tenderness disappeared completely after a few injections had been given. In the majority of cases of pulmonary tuberculosis the first few injections lead to an increase in the weight of the expectoration and to an increase in the number of moist sounds. In a certain number this increase has been followed by a diminution in the weight of the sputum which has been progressive, together with a diminution in the number of adventitious sounds. These results are sometimes more marked during the periods in which the injections are omitted than they are when the serum is being used. It is too early, however, for me to give a useful summary of the effects of the serum on the various symptoms, especially as a considerable proportion of the comparatively small number of cases I have had an opportunity of treating for an adequate period are still under treatment. I will content myself with giving a few examples of the cases under my care which appear to show that the serum does produce a definite antitoxic effect.

CASE 1.—The patient was a male, aged 19 years. Five weeks before admission he had consulted Dr. E. C. Greenwood who sent him to me. For two weeks previously to his visit to Dr. Greenwood he had been feeling "out of sorts" in consequence of a strain at football. Up to this time he had always felt well. For the last three weeks before admission he had suffered from cough, night sweats, and fever. During the last month he had lost six pounds. On admission he was anæmic and complained of dyspnœa on exertion and of being easily fatigued. The pulse was 108, regular, soft, and of poor volume. The evening temperature was 100° F. On examination it was found that there was tuberculous infiltration throughout the right lung with signs of commencing softening in the upper third. The left lung was healthy. During the first week in the hospital, when no injections were given, the average daily weight of the sputum, which was nummular and muco-purulent in character, was one ounce. The sputum contained on an average 38 tubercle bacilli in the film. The body-weight was 9 stones 6 pounds. This patient received 145 cubic centimetres of the serum in 23 injections. After six weeks' treatment he left St. George's Hospital for the Royal Ventnor Hospital. During his treatment he became stronger and felt much more comfortable. The night sweats ceased and the cough became less troublesome. The amount of expectoration became less and instead of averaging, as on admission, one ounce by weight a day averaged 2½ drachms. The number of tubercle bacilli showed no diminution. The patient, who was of a better class than the usual hospital patient, gained ten pounds in six weeks. When he left St. George's Hospital he was able to walk three miles without fatigue. The temperature became practically normal. The dyspnœa disappeared. With regard to the physical signs it is interesting

to record that there was no extension of the disease to the left lung. The actual extent of the disease in the right lung underwent no diminution during the six weeks of treatment. Where there had previously been signs of softening there was now definite excavation with comparatively few moist sounds. In the rest of the right lung the adventitious sounds became markedly less.

CASE 2.—The patient was a man, aged 36 years, who was treated at the Brompton Hospital. In July, 1903, he had an attack of hæmoptysis. Since then he had suffered from cough and expectoration. On admission he was described as a fairly healthy man with a malar flush. His voice was hoarse, the epiglottis was thickened and rigid, and no view of the larynx could be obtained. The evening temperature was 101° F. The daily weight of the sputum varied from three to six ounces and contained tubercle bacilli. The body weight was 9 stones 6 pounds. The whole of the left lung was found to be infiltrated and there were large crepitant râles to be heard in the region of the axilla and over the lower half of the lung. This patient has had up to the present time 260 cubic centimetres of the serum in 42 injections. At first he felt more comfortable and the night sweats disappeared. After three injections the evening temperature fell from 101° to normal, although a week's treatment under ordinary conditions had produced no change in his symptoms. After 42 days' treatment the physical signs in the left lung had somewhat diminished, the large crepitant râles being less numerous, but there were now signs of early infiltration at the apex of the right lung. Consequently the serum treatment was omitted on Jan. 22nd. The evening temperature, which hitherto had been normal except at the commencement of the treatment, again rose to 100° on Feb. 6th and remained at this point till the 18th. The man began to lose ground. At his own request the injections were renewed on the 16th and the temperature again became normal on the 18th. At the present time the physical signs in his left lung, more especially at the base, are much less marked as far as adventitious sounds are concerned and the recent infiltration at the right apex shows signs of diminution. The voice is distinctly less hoarse, the general condition is improved, and there has been a gain in weight of 11 pounds in three and a half months. The weight of sputum and the number of bacilli so far show no sign of decrease.

CASE 3.—The patient was a male, aged 17 years. He had a chill 12 months before admission to the hospital with subsequent cough. He had been losing ground for the last three months. On admission he was suffering from night sweats and dyspnœa. Physical examination showed infiltration of the upper third of both lungs with signs of excavation on the left side. 160 cubic centimetres of serum were given in 26 injections. The patient has left the hospital with his general condition somewhat improved in that he has lost his night sweats and suffers less from dyspnœa. His weight has remained stationary and the physical signs in the lungs show no alteration beyond some diminution in the number of moist sounds. The interest of this case lies in the sputum. This, though never profuse, showed a diminution in weight. Again, during the first week of treatment 40 tubercle bacilli were found in the average field together with a few elastic fibres. During the last eight weeks of the patient's stay in the hospital a weekly examination of the sputum failed to reveal any elastic fibres or tubercle bacilli except a clump of four bacilli on one occasion. The sputum contained a number of cocci and towards the end of the treatment was possibly largely pharyngeal.

CASE 4.—This case was one of extremely acute tuberculosis. A woman under the care of Mr. Owen Lankester, who had previously enjoyed good health, complained of feeling unwell. On an examination of the chest crepitations were discovered at the apex of the right lung. Tubercle bacilli were present in the sputum. The disease rapidly spread throughout both lungs and a fatal issue resulted in six weeks from the onset of the first symptoms. When I saw this patient five weeks after the commencement of the illness there appeared to be no hope whatever of a favourable issue. Large crepitant râles were heard over the entire surface of both lungs. Dyspnœa was marked, the pulse was feeble, and the temperature was 105° F. In view of my limited experience of the serum at that time I was not anxious to try it in this case, but somewhat against my will consented to do so. The effect of the serum, which was given in doses of five cubic centimetres, was well shown in the temperature chart. Not only was the temperature reduced but the character of the daily curve was altered. The clinical records extended over 11 days—namely, from Feb. 4th to the 14th—the temperatures being taken every four hours. On nine occasions the maximum daily temperature was at 2 A.M. or 6 A.M., while on two occasions it was at 10 A.M. or 2 P.M. Injections of five cubic centimetres of serum were given on Feb. 7th, 8th, 9th, 10th, 12th, 13th, and 14th. On and after Feb. 9th the character of the temperature curve was changed, the daily maximum being lowered and the fluctuations greatly reduced in their range. On Feb. 9th the maximum recorded was 103° and the minimum 101°. On Feb. 10th the maximum was 101·6° and the minimum 99·6°. On Feb. 11th, when no injection was given, the maximum was 103° and the minimum 98·4°. On Feb. 12th the maximum was 101° and the minimum 97·6°. On Feb. 13th the maximum was 100·4° and the minimum 97·8°. On Feb. 14th, when death took place in the evening, the maximum was 100°. The highest recorded pulse-rate was 108 and the lowest was 80. The condition of the lungs showed no amelioration. I gave the small doses of five cubic centimetres partly because I did not wish to set up unpleasant serum effects and so to add to the discomfort of the patient, but chiefly because I thought that the serum, which, as I have said, often increases the amount of expectoration and the number of adventitious sounds for the first few days, might act detrimentally if given in large doses in this case on account of the severity of the catarrh already present. It is an open question whether large doses should not be given in a similar case. Certainly, if a case of this kind is seen at an earlier period, doses of at least ten cubic centimetres daily should be given.

CASE 5.—The patient, a boy, aged 14 years, was sent into St. George's Hospital by Mr. T. Crisp English for early tuberculosis of the lower end of the fibula on the left side. There was a history of aching pain in the left ankle for 14 days. No cause of the disease was known and there was no history of an injury. A swelling had appeared after a few days. On admission there was definite thickening of the lower end of the left fibula. The skin over the outer malleolus was livid and glossy. The movements of the ankle-joint were fairly free but there was pain on pressure and on extreme extension. The tibia was unaffected. The boy was kept in bed but received no treatment beyond the injections of serum. 55 cubic centimetres of serum in six injections were given. After three injections the pain completely disappeared and 14 days after the commencement of the treatment the condition of the boy was such that he was allowed to get up and to walk about the ward. The disease apparently has been completely arrested. This case is the only example of early tuberculosis which I have treated so far with the serum. It is, of course, in no way conclusive, for such cases show improvement sometimes of a similar kind when treated with rest alone. The rapid disappearance of the pain and subsidence of all symptoms are, however, suggestive.

As a result of my experience of this new treatment up to the present time I think I may say that the serum when given in carefully graduated doses, with proper precautions and in suitable cases, does no harm. Further, my experience tends to show that the serum does produce a specific antitoxic effect. In any case, there can be no doubt that an extended trial of this remedy should be made, more especially in less severe cases than those to which I have hitherto intentionally confined my attention. It must not, however, be forgotten that great care must be exercised in the administration of this remedy and that the treatment may have to be extended over a considerable time before permanent results are obtained.

In conclusion, I would express my gratitude to Dr. Marmorek for his advice and constant consideration, to a number of my colleagues for their kindly coöperation, to Dr. W. B. Swete Evans of St. George's Hospital, and to the house officers of the Brompton Hospital for their unwearying assistance.

Brook-street, W.

HOSPITAL SUNDAY FUND IN BRISTOL.—Up to March 10th 359 collections in aid of the Lord Mayor of Bristol's Hospital Sunday Fund, yielding £1700, had been received. The number made in 1903 was 327, producing £1565, and this year's collections have exceeded that total by £135.

THE MENTAL CONDITION IN EPILEPSY IN RELATION TO PROGNOSIS.[1]

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IN a previous communication to this society[2] I dealt in general terms with the prognosis and curability of epilepsy, with reference more particularly to the convulsive element. In the present paper a special study has been made of the influence of the mental condition in epilepsy upon the prognosis of the disease.

That the mental condition in epilepsy has been the subject of much investigation is apparent from a review of most of the treatises upon the disease. Morel speaks of the "epileptic character" and other writers refer to the characteristic loss of memory and irritability of temper shown by many epileptics. Reference is also not uncommonly made to epileptic insanity, but authorities differ as to the frequency and causation of a disordered mental state. Whether, indeed, it is an essential feature of the disease, whether epileptics tend invariably towards dementia as a natural consequence of the malady, or whether it is dependent upon the frequency, the character, or the severity of the seizures, is the subject which will now be brought under discussion.

A brief reference may first be made to the proportion of epileptics who become mentally afflicted according to the statements of different writers. Esquirol,[3] for instance, stated that of 385 epileptic women observed in the Salpêtrière, 73 per cent. were mentally afflicted. Russell Reynolds[4] referred to the fact that of the 62 cases studied by himself, 38 per cent. were free from any mental failure, 46 per cent. showed some degree of mental impairment, and 14 per cent. were demented. Wildermuth[5] mentioned that the percentage varied according to whether the cases were observed inside or outside an institution. From the observation of his institutional cases he found 78 per cent., and of those outside the institution 47 per cent. mentally afflicted. Habermaas,[6] who has studied the mental condition in detail amongst the patients attending the Epileptic Institute at Stettin, gives the following figures: 17·3 per cent. were intellectually normal, 21 per cent. were able to earn wages, 30 per cent. could do some work, and 49 per cent. were so demented that they were unable to work at all. Of those patients who were inmates of the institution only 13 per cent. were intellectually normal and 22 per cent. were demented, while the remainder showed intermediate degrees of mental failure. Some further facts mentioned by Habermaas may be added. He refers to Tigges, who found 23 per cent. out of 124 epileptic children mentally defective, and to Pelman, who found 50·8 per cent. of epileptics mentally healthy. The above-mentioned facts show that in the opinion of many writers upon epilepsy mental failure is more common than mental health and that this is true whether the patients are observed inside or outside an institution for epileptics.

THE MENTAL CONDITION IN EPILEPSY.

The mental state in epilepsy is usually described under two heads: first, that which may be regarded as incidental to the seizures; and, secondly, the interparoxysmal condition. The former heading includes all those delusional, maniacal, and melancholic states which precede or succeed more especially the major convulsions and which may be considered as constituting epileptic insanity, while the latter embraces the mental attitude and characteristics of the patient between the seizures, and may with confidence be looked upon as the typical epileptic mental condition. It is therefore the latter element of the disease which will receive detailed consideration in the following remarks.

Following upon the lines laid down by Reynolds, Habermaas, and others, sane epileptics have been divided, according to their interparoxysmal condition, roughly into four classes, showing slight, profound, or intermediate degrees of mental deficiency, and the general features of those classes may be briefly described as follows.

Class A.—In this division are included all those epileptic individuals in whom no mental impairment can be detected. They may be regarded as differing in no way from normal persons in the same social sphere and with similar educational advantages; the memory is good, they are bright, active, and intelligent, and they are capable of earning their own living; only in rare instances do they show the epileptic face. Their physical condition is good. For all practical purposes they may be regarded as normal.

Class B.—This class, to which the majority of epileptics belong, includes those who exhibit the first degree of mental enfeeblement, which is characterised mainly by some defect of memory, more especially a forgetfulness of recent events. In other respects their mental condition is good, they have fair intelligence and capacity for work, they are able to earn their living and to attend to their several duties. Their physical condition varies. A considerable proportion show the epileptic face.

In *Class C* are found those cases which present the second degree of mental impairment. In addition to an impaired memory there are defective power of initiation and capacity for work which, however, may be well done under direction and supervision. They are slow in comprehension and are often lazy. Many of them are irritable and passionate. About 50 per cent. show the epileptic face.

Class D contains those who show the third or most pronounced degree of dementia. They present the typical features of epileptic dementia—viz., a very defective memory, confusion of ideas, poor capacity for work even under direction, absence of initiative, and a slow and dull comprehension. Although not legally insane, they require supervision. Their physical condition is as a rule good, they eat heartily, and sleep well. The majority have the epileptic face.

Under these heads the mental condition in epilepsy will receive consideration, but a passing reference may be made to certain elements in the mental state which will not be specially considered later. I refer to the *epileptic temperament*.

Epileptics are usually of a sociable disposition. The majority are possessed by a religious fervour which, forming a marked feature of their disease, contrasts strongly with their actions, these being mostly perverted, passionate, or even immoral. On the whole they are self-opinionated and possess a conceit and an assurance which are out of all relation to their achievements. Their mental perspective is in consequence entirely blurred and disproportioned, giving to their views and methods an importance which cannot be legitimately claimed for them. While admitting of striking exceptions their want of initiative is characteristic. On this account, although some are good workers, most require supervision and direction. Points also to be observed in the epileptic character, no doubt the direct consequences of the malady, are lethargy and laziness, combined with an extreme pugnacity and hastiness which make them contentious and difficult to live with.

Of the more purely mental characteristics I would refer in the first place to the temporary dulling of the memory and of the finer mental faculties which is to be observed during a temporary increase in the frequency of the fits, more especially observable at the commencement of the disease. This mental clouding should not be mistaken for the beginning of epileptic dementia; it is a common mental phase of many of the patients at the time of their admission to the epileptic colony and in the majority of cases it clears up under the judicious administration of bromides or when the patient is removed from unsatisfactory domestic or other environment. Of these characteristics, I would mention, secondly, the fleeting irritability, lethargy, impairment of memory, and even delusional state which not infrequently precede for a day or two the onset of a fit or fits. This is a condition well worthy of careful recognition, as those who live with epileptics are often able to predict a seizure. This state is, however, prodromal to the attacks and is not considered as evidence of interparoxysmal mental failure.

THE STATISTICS.

The cases forming the material for this paper are those which have been under care and treatment at the Colony

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[1] A paper read before the Royal Medical and Chirurgical Society on March 22nd, 1904.

[2] Transactions of the Royal Medical and Chirurgical Society, vol. lxxxvi., p. 259.

[3] Esquirol: Des Maladies Mentales, &c., Paris, 1838.

[4] Russell Reynolds: Epilepsy, London, 1861, p. 43.

[5] Wildermuth: Quoted by Habermaas.

[6] Habermaas: Allgemeine Zeitschrift fur Psychiatrie, vol. lviii., p. 243.

for Epileptics, Chalfont St. Peter. Such cases lend themselves the more readily for observations upon the mental characteristics of epilepsy, as previously to admission they have probably experienced some form of treatment and have become in the majority of instances confirmed epileptics. For various reasons particular care is taken in the selection of the cases admitted to the colony. Mere frequency or severity of the fits does not disqualify patients for admission, but the following are, if at all possible, refused: (*a*) Those who from physical causes are not sufficiently strong to undertake some kind of active work; (*b*) those who from habitual irritability of temper and awkwardness of disposition would not live in harmony with their fellows or be amenable to rules and regulations; and (*c*) those who are imbecile, demented, delusional, or liable to dangerous impulses. In this way an attempt is made to separate the sane from the insane epileptic. The cases therefore which form the subjects of the present observations are so far as possible illustrative of the mental condition characteristic of epilepsy as met with outside asylums for the insane. There are several obvious advantages in studying epileptics in such an institution as an epileptic colony. There is, first, the fact that the patients are under constant supervision and treatment; secondly, the mode of life, the diet, and the general care and hygiene are uniform; and, thirdly, the work is apportioned according to individual capabilities and tastes.

The observations have been conducted over periods varying from six months to ten years. The number of fits is recorded on specially designed charts, whilst the mental condition and the working capabilities of the patients are noted from time to time. Treatment by bromides is reduced to a minimum, only a few patients receiving more than the 30 grains of bromide of potassium prescribed at bedtime. The total number of cases upon whom observations have been made is 161; of these 102 are males and 59 are females. They include all ages from 14 to 50 years. Only one patient was admitted over 50 years of age—viz., 58. In the study of the cases the statistical method has been adopted and the results are recorded in percentages. Although, as elsewhere pointed out, objections may be raised against this method it is deemed to be the best available and the results show a marked uniformity when considered from various points of view.

STATISTICAL FACTS BEARING UPON THE INTERPAROXYSMAL MENTAL CONDITION.

The several varieties and degrees of the interparoxysmal mental state in epilepsy, the relation to the various stages and types of the disease, and the bearing upon prognosis will be discussed in detail under the following headings: (1) sex; (2) hereditary predisposition to epilepsy and insanity; (3) duration of the disease from the commencement of the convulsions; (4) the age of the patient at the onset of the disease; (5) the character, type, and combination of the seizures; (6) the frequency of the seizures; and (7) the facies epileptica.

1. *Sex.*—In this and the following tables epileptics have been classified according to the degree of mental impairment already described into four subdivisions:—

TABLE I.—*Giving the Total Number of Males and Females, with their Percentage Frequency in the Four Subdivisions of Mental Failure.*

Mental class.	Males.	Females.	Total.	Total percentage.
A	9 (8·8 per cent.)	13 (22·0 per cent.)	22	13·6
B	35 (34·3 ,,)	16 (27·2 ,,)	51	31·6
C	29 (28·4 ,,)	12 (20·3 ,,)	41	25·4
D	29 (28·4 ,,)	18 (30·5 ,,)	47	29·1
Totals	102	59	161	99·7

From this it appears that the greatest number of epileptics (31·6 per cent.) were found to belong to Class B and to show only the slightest or first degree of mental impairment. But if, on the other hand, the table be so subdivided that Classes A and B, C and D be bracketed together, it will be found that 45 per cent. belong to the former and show no, or only slight, mental deficiency, while 54·5 per cent. belong to the latter and show mental deterioration in its most pronounced forms. It is therefore obvious that the cases herein tabulated give a larger proportion which exhibit mental deterioration of a marked type.

It should, however, be pointed out that the above percentages do not faithfully depict the mental state of epileptics in general, as it is obvious that those cases which seek treatment at a colony do so on account of some mental disability which prevents them earning a living under ordinary conditions. Secondly, if the table be read in vertical instead of horizontal columns, it will be seen that a larger percentage of women (22 per cent.) escape the deteriorating influence of epilepsy than men (8·8 per cent.); but that when dementia supervenes and reaches its most pronounced form a larger percentage of women (30·5 per cent.) are affected than men (28·4 per cent.). The most frequent mental condition in males is seen to be a slight impairment of the memory and a blunting of the higher mental faculties (Class B).

If these figures are compared with those given by Habermaas a close correspondence will be found to exist between them and the cases observed at the Stettin Institute, as will be apparent from Table II.:—

TABLE II.

	Stettin Institute.	Chalfont Colony.
Intellectually normal	15 per cent.	13·6 per cent.
With poor memory	20 ,,	31·6 ,,
Feeble-minded	41 ,,	25·4 ,,
Demented	22 ,,	29·1 ,,
Total cases	226	161

2. *Hereditary disposition.*—The hereditary tendencies referred to under this heading are epilepsy and insanity. On account of the difficulty in obtaining satisfactory information on these points a large number of cases have had to be eliminated owing to the absence of any note either establishing or disproving such a family disposition. Of the total of 161 cases there was no note of a heredity to either epilepsy or insanity in 73. Table III. shows the result of the investigation among the remaining 88 cases:—

TABLE III.—*Showing the Presence or Absence of a Hereditary Disposition in 88 Cases.*

		A.	B.	C.	D.	Total.
No known heredity		11	18	9	11	49
Epilepsy	Paternal	0	8	2	3½	29
	Maternal	4	5	5	2½	
Insanity		1	2	2	5	10
		16	33	18	21	88

The distribution and percentages are therefore the following in the several mental classes:—

In A there are 5 cases out of 16 with hereditary tendencies, or 31%
,, B ,, 15 ,, 33 ,, ,, 45%
,, C ,, 9 ,, 18 ,, ,, 50%
,, D ,, 10 ,, 21 ,, ,, 47%

The facts, therefore, which may be deduced from Table III. are that those epileptics who show no mental impairment (Class A), or only some impairment of memory (Class B), present a lower percentage with hereditary neurotic tendencies than those cases which exhibit dementia in its more pronounced forms (Classes C and D). This fact, taken by itself, points to the deteriorating influence which a family disposition to epilepsy or insanity has upon the mental condition of those who subsequently develop epileptic seizures.

The table may profitably be compared with one which was given in a previous paper[7] to illustrate the effects of a hereditary history upon the general results of treatment in epilepsy. From this it was seen that of those cases which had a hereditary disposition to epilepsy 36 per cent. became confirmed epileptics, while of those without such history only 19·2 per cent. became confirmed.

The general deduction, therefore, which may be drawn from the above facts is that a family tendency to either epilepsy or insanity, although offering no obstacle to the arrest of the seizures in favourable cases, materially increases the probability of the disease becoming confirmed and the supervention of dementia.

3. *Duration of the disease.*—The influence of the duration of the disease upon the degree of mental decrepitude has been regarded by many writers as of much significance. In opposition to the commonly expressed opinion upon this matter Russell Reynolds held to the belief that the duration of epilepsy from the commencement of the seizures was without influence upon the mental condition of the epileptic. A table has therefore been constructed with a view to

[7] Transactions of the Royal Medical and Chirurgical Society, loc. supra cit.

throw further light upon this part of the subject. A total of 160 cases has been used in the construction of Table IV., which gives the duration of the disease in quinquennial periods, with the number and percentage frequency of the cases in the four classes of mental disability. It should be specially borne in mind that the term "duration" here signifies the length of the disease as indicated by the epileptic seizures and not of the mental impairment alone.

TABLE IV.—*Showing the Duration of the Disease and the Number and Percentage Frequency of the Cases in the four Mental Classes.*

Duration (years).	A.	B.	C.	D.	Total.
Under 5	6 (27·2%)	10 (45·0%)	3 (13·6%)	3 (13·6%)	22
6 to 10	13 (30·9%)	10 (23·8%)	7 (16·6%)	12 (28·5%)	42
11 ,, 15	1 (3·1%)	10 (31·2%)	10 (31·2%)	11 (34·3%)	32
16 ,, 20	1 (3·5%)	4 (14·2%)	10 (35·7%)	13 (46·4%)	28
21 ,, 30	1 (4·7%)	8 (38·0%)	4 (19·0%)	8 (38·0%)	21
Over 30	1 (6·6%)	6 (40·0%)	7 (46·6%)	1 (6·6%)	15
Mean duration... ...	3·8 years.	8 years.	6·8 years.	8 years.	160

From a consideration of Table IV. the following general deductions may be made: 1. That under five years' duration there is a considerably greater percentage of cases with no mental impairment, or merely some interference with the memory (Classes A and B, 72 per cent.), than of those with well-marked mental deficiency (Classes C and D, 27 per cent.). 2. That of those cases in which the disease has existed from six to ten years there is a slightly greater percentage in Classes A and B (54·5 per cent.) than in Classes C and D (45 per cent.). 3. But that if the convulsions have lasted for periods over 10 or 11 years only a trifling percentage of cases are to be found in Class A, the majority showing the mental characteristics of Classes C and D. 4. It should, however, be especially pointed out that in a very few cases the disease may have lasted for periods of 30 or more years without any obvious mental impairment.

It has been stated by Russell Reynolds that if the mean duration of the disease in the several classes be taken it will be found that its influence upon the mental condition is trivial. Further reference to Table IV. will show that the mean duration of the disease in Class A is 3·8 years, while that of Classes B, C, and D varies from 6·8 to 8 years. There is not, therefore, that progressive increase in mean duration in the several mental classes that might be expected, for the difference between the mean duration of Class A, which contains those cases without any obvious mental impairment, and Class D, comprising those with the greatest degree of dementia, is about four and a half years, being practically the same as that between A and B, in which latter class we find those with merely some impairment of memory. It may therefore be concluded that although the duration of epilepsy from the commencement of the seizures is a potent factor in determining the subsequent mental condition it is not the only influence in the production of dementia.

4. *Age at onset.*—There is a total of 157 cases in which the age at onset of the disease was known. In order to gauge the influence, if any, which this factor has in determining the subsequent mental condition of the patient a table has been constructed giving the number and percentage frequency of epileptics in the four mental classes, the age at onset being subdivided into quinquennial periods from birth to 35 years.

TABLE V.—*Showing the Age in Quinquennial Periods at Onset of the Fits, with the Number and Percentage Frequency in the Four Mental Classes.*

Age (years).	A.	B.	C.	D.	Total.
0 to 5	1 (3·3%)	9 (30·0%)	9 (30·0%)	11 (36·6%)	30
6 ,, 10	3 (11·5%)	8 (30·7%)	7 (26·9%)	8 (30·7%)	26
11 ,, 15	10 (18·1%)	15 (27·2%)	17 (30·9%)	13 (24·5%)	55
16 ,, 20	7 (24·1%)	8 (27·6%)	5 (17·2%)	9 (31·0%)	29
21 ,, 25	0	4 (57·1%)	1 (14·2%)	2 (28·5%)	7*
26 ,, 30	1 (16·6%)	1 (16·6%)	1 (16·6%)	3 (50·0%)	6*
31 ,, 35	0	2 (50·0%)	0	2 (50·0%)	4*
					157

* The small number of cases shown here is due to the fact that at the epileptic colony epileptics are preferably admitted under 20 or 21 years of age.

From Table V. we may deduce the following general conclusions: 1. That a low percentage of the cases forming Class A is to be found amongst those epileptics in whom the disease commences in early childhood; amongst them also is to be found a high percentage of those showing profound mental impairment and if we exclude those in whom the disease commenced after 21 years of age owing to the smallness of the numbers the lowest percentage of cases with mental integrity and the highest with mental infirmity are to be found amongst those epileptics in whom the disease commences in infancy and early childhood. 2. From the first quinquennial period onwards to that of 16 to 20 years of age the percentage of cases showing no obvious mental deficiency progressively increases until in the fourth quinquennium (from 16 to 20 years) a greater percentage of cases is to be found in the combined Classes A and B (51·7 per cent.) than in the combined Classes C and D (48·2 per cent.). 3. No general deductions may be safely drawn from the cases in the succeeding quinquennial periods owing to the fewness of the cases observed, but it may be said in general terms that in epilepsy commencing over 21 years about an equal percentage show only impairment of memory (Class B) and the higher degrees of mental deficiency (Classes C and D).

These results are at variance with what was noticed by Russell Reynolds working along similar lines. This observer noted that whether the disease commenced early or late in life more cases were to be found in Classes A and B than in C and D—in other words, "that the mind is not specially affected in those whose epilepsy begins early, neither is it in those whose disease is late in its development" (p. 166, op. cit.). On the other hand, the results obtained in this present research support the contention of most of the older writers on epilepsy and confirm what has been pointed out in a previous article upon general prognosis (loc. cit., p. 288)—viz., that epilepsy commencing in infancy and childhood is least favourable for arrest of the fits and most favourable for the production of confirmed cases. It is also found that the common type of epilepsy—that commencing during the period of puberty—is most suitable for arrest of the seizures and least likely to be associated with mental infirmity.

5 *Character of the fits.*—The character of the epileptic seizures has for long been regarded as an important factor in determining the mental condition. It is generally accepted that the petit mal variety exerts a greater deteriorating influence upon the mind than the convulsive or grand mal type. This is no doubt the common experience of those through whose hands numbers of epileptics pass. A table has therefore been constructed to show the effect of the two common types of seizure upon the mental state. A total of 159 cases has been used in whom the character of the fits was definitely known.

TABLE VI.—*Showing the Percentage Frequency of the Four Mental Classes in the Common Types of Epilepsy.*

Type.	A. Per cent.	B. Per cent.	C. Per cent.	D. Per cent.	Total.
Grand mal only	24·3	27·0	27·0	21·6	74
Petit mal only	7·1	42·8	21·4	28·5	14
Combined grand and petit mal	4·2	32·8	25·3	38·9	71
					159

The grand mal type, therefore, when occurring alone is not found to be characteristically accompanied by profound mental impairment, for the table shows an almost equal percentage of cases in the several mental classes. On the other hand, the greatest frequency and highest degree of dementia are to be found in those cases which are characterised by a combination of the grand and petit mal attacks, only 4 per cent. of such cases being found without any obvious mental impairment.

The general deductions therefore are:—(1) Mental deterioration is found in association with both types of seizure, but its presence is less frequent in those cases in which the grand mal is the main expression of the disease; (2) freedom from mental impairment is also found in both types but to a minimal extent in those cases characterised by petit mal whether alone or in conjunction with grand mal; (3) the mind is more frequently affected to a slight extent (Class B) in those cases in which the petit mal seizures occur alone; (4) the mind attains its most universal and profound impairment when the disease is manifested by a combination of grand and petit mal attacks. In amplification of these statements it may be

mentioned that figures have been brought forward to show (loc. cit., p. 274) that the grand mal seizures are the most readily influenced by treatment, while distinctly less favourable are the cases of combined grand and petit mal.

6. *Frequency of the seizures.*—In order to facilitate the consideration of the influence of the frequency of the epileptic attacks upon the mental condition the fits have been divided into those which may be conveniently counted by the day, the week, the month, the quarter, and the year. There have been added in a separate column those whose incidence is especially in series, while a special group has been formed of those cases in which the fits have been arrested.

In an institution such as the Colony for Epileptics it is a comparatively easy matter to register the number of the seizures and at the Chalfont Colony this is done on specially constructed charts so that at a glance there can be seen the daily, weekly, monthly, &c., incidence of the seizures, whether grand mal or petit mal in character, and whether they occur by day or during sleep. By fits occurring in series I refer to those specially interesting cases where, in place of one or two fits occurring at a time, series of fits, sometimes amounting to several score, occur over a short period, to be followed by a variable interval of freedom before the succeeding batch ensues.

TABLE VII.—*Showing the Percentage Frequency of the Attacks in the Four Mental Classes.*

Frequency.	A. Per cent.	B. Per cent.	C. Per cent.	D. Per cent.	Total.
Daily (one or more)	0·0	17·4	27·9	55·5	18
Weekly (one or two)	1·3	28·3	33·3	39·0	72
Monthly (one or two) ...	25·7	48·5	17·1	8·5	35
Quarterly (one or two) ...	57·1	14·2	28·5	0·0	7
Yearly (one or two)	50·0	50·0	0·0	0·0	8
In series	7·6	23·0	23·0	46·1	13
Arrested cases	50·0	16·6	16·6	16·6	6
					159

At the first glance there will be noticed a definite relation between the frequency of the seizures and the mental state to such an extent that when the fits are of very frequent recurrence (daily), none of the patients were without obvious mental impairment, over 50 per cent. of them being in Class D, and therefore exhibiting the highest degree of dementia. On the other hand, if the seizures are so infrequent as to be counted by the quarter or year, over 50 per cent. were found in Class A while none at all were grouped in Class D. Between these extremes there are various gradations, so that the general statement may be made that there is a direct relationship between the frequency of the seizures and the degree of mental impairment—the more frequent the attacks the more common and profound the associated dementia.

If attention is now directed to those seizures the recurrence of which is characterised by batches, it will be observed that in this type we are dealing with cases unfavourable to the maintenance of mental integrity, considerably more than double the number of such patients being found with the severer grades of mental deficiency (69·1 per cent.). In this type of epilepsy, therefore, we are confronted with a variety of the disease prone to the development of dementia.

The mental state of those cases in which the seizures have been arrested, either with or without treatment, presents features of great interest, for the table shows that even when the fits are arrested there is not necessarily an unimpaired mental state remaining—that is to say, that arrest of the seizures does not *ipso facto* imply arrest of the disease. The significance of this will be considered with other points in a later paragraph.

Nothing illustrates more forcibly the severity of the disease than the frequency of the seizures, for in addition to the close association between frequency of seizures and mental deterioration there is a remarkable relation between the frequency and the arrest of the fits. Attacks which recur every three or four months or once or twice a year show the highest percentage of arrested and the lowest percentage of confirmed cases; and the converse also holds good, in that attacks recurring so often as several times a day show no cases of arrest (op. cit., p. 273) just as in Table VII. they show no cases of mental integrity.

7. *The facies epileptica.*—The close relation which exists between mental disability and facial expression is nowhere more readily seen and studied than in cases of confirmed epilepsy. So characteristic indeed is the facial appearance of many epileptics that the term "facies epileptica" has been applied to it. Although difficult to define it is readily discerned by those who are in the habit of treating large numbers of epileptics. It may, in general terms, be described as an expression of dulness and heaviness, with an absence of emotional mobility of the features. It differs from that of the ordinary dement by a particular expression which stamps the individual as an epileptic. That the epileptic appearance is largely dependent upon the mental attitude may be seen from Table VIII., which has been constructed to show the percentage frequency of the facies epileptica in the four mental classes.

TABLE VIII.—*Showing the Frequency of the Facies Epileptica in the Mental Classes.*

	A.	B.	C.	D.	Total.
Total cases	22	51	41	47	161
Facies epileptica { 2 or ...	16 or ...	21 or ...	34 or ...	73 or
seen in... ... ... { 90%	31·3%	51·2%	72·3%	45·3%

Of a total, therefore, of 161 cases 73, or 45·3 per cent., showed the expression of countenance known as the facies epileptica. Its presence was noted in those with mental integrity as well as in those showing the several degrees of dementia but its percentage frequency showed a progressive accession as the degrees of dementia increased, until in Class D as many as 72·3 per cent. of the epileptics showed the characteristic expression. It is more frequently seen in male than in female epileptics, for of the 73 cases only 19 were women.

IS THE INTERPAROXYSMAL MENTAL CONDITION IN EPILEPSY AN INTEGRAL PART OF THE DISEASE?

It is generally known, and the observation has been amply corroborated by the foregoing statistics, that both mental integrity and mental impairment may be found amongst epileptics, but the question arises whether the mental condition which characterises the interparoxysmal period in many epileptics forms an integral feature of the disease, or is induced by the character, the duration, and the frequency of the seizures, or by any other peculiarity of the malady. As reference has already been made to the views of the earlier physicians upon this subject and the divergence of opinion which is held upon it, it is only necessary in this place to consider how far the present statistics throw any further light upon the solution of the question.

In the first place, it may be stated that mental failure is not essential to the idea of epilepsy. On the one hand, it is seen that a certain number of epileptics present no obvious mental deficiency, notwithstanding an inherited predisposition to the disease, a duration of the malady for from 20 to 30 years, its onset in early life, the combination of both the major and the minor seizures, and a recurrence of the seizures so frequent that they may be counted by the week. On the other hand, it has been shown that pronounced dementia may exist when there is no known heredity, when the disease is of short duration (under five years), when the age at onset is as late as the fourth decennium, whether the attacks are of the grand or petit mal type, and even when the seizures have been completely arrested.

Secondly, an attempt will be made to show on the basis of the collected cases that the mental condition is not a direct consequence of the seizures, but is an expression of the same nervous constitution which gives rise to the convulsions, but influenced by various coexistent factors, such as hereditary disposition, duration of the disease, age of the person at the onset of the convulsions, and the character and frequency of the paroxysms.

(*a*) A hereditary disposition to epilepsy and insanity—in other words, a family degenerative neurosis—favours the production of the severer types of dementia and the establishment of the disease as a confirmed malady, as shown in Table III.

(*b*) The duration of the disease is a potent factor in determining the mental condition, but its influence is incidental to, rather than causative of, the mental decrepitude, for, as is shown in Table IV., a fair percentage of cases of extreme dementia are met when the disease has lasted less than five years, as well as a percentage of cases with mental integrity after the fits have persisted for over 50 years.

(*c*) Upon the character or type of the seizures depends to a large extent the degree of mental impairment. But

dementia and mental integrity are inversely associated with the severity of the attacks, the major convulsions being as commonly accompanied by mental health as by profound dementia. On the other hand, the minor seizures are more frequently found with mental failure than with mental health (Table VI.). The nature and combination of the attacks therefore provide an indication of the severity of the disease. The petit mal attacks when occurring alone are more frequent than the grand mal under similar conditions, but the combination of the two kinds occasions a frequency and intensity of the seizures, which furnish an indication of the degree and intensity of the malady. But the character of the seizures, though influential, is not solely responsible for the mental condition, for it is found that both types, separately or in combination, are associated with mental integrity as well as with mental deficiency.

(*d*) The facies epileptica is found in those who show the slighter as well as the more profound degrees of dementia, but there is also a very small percentage of epileptics with normal mental attitude in whom this feature is present. Although its presence is not directly referable either to the degree of mental infirmity or even to any mental deficiency at all, the proportion of cases in which it is observed is in direct relation to the intensity and severity of the mental decrepitude. Hence the facies epileptica is another feature of the degenerative neurosis producing the disease, of which convulsions and mental impairment are further symptoms. The severity of the disease, therefore, is gauged by the combination of the grand and petit mal attacks, by the degree of dementia, and by the occurrence of the facies epileptica.

(*e*) There is a direct association between the frequency of the seizures and the mental state, for the more frequent the attacks the greater the degree of mental impairment and *vice versâ*. If the severity of the disease in any given case is gauged partly by the frequency and partly by the character-combination of the paroxysms then it is found that the severer the disease the greater the tendency towards dementia. For it is a well-recognised clinical fact that attacks which recur daily or weekly are rarely either of the major or minor types alone, but a combination of the two, with the minor variety the more obtrusive. And in this relation attention may be also directed to that class of epileptic in whom the fits are especially in series. These cases indicate a modification of the disease, with periodic exacerbations of extraordinary intensity and in them we find a high percentage of dements. We have also seen that there exist certain cases of epilepsy where the fits have been arrested either spontaneously or by treatment. In these all classes of mental impairment may be met, so that arrest of the seizures does not necessarily imply arrest of the disease.

(*f*) The age at which the disease commences, which is determined by the onset of the seizures, influences to some extent the subsequent mental condition; in other words, the earlier the onset of the fits the less the probability of an unimpaired mental condition and the greater the chance of the establishment of confirmed epilepsy. The type of cases found in institutions for epileptics shows this more obviously than those which remain outside, no doubt on account of the greater severity of the disease in the former, indicated by the greater frequency of the seizures and by the combination of the major and minor types.

The evidence adduced in this paper tends to support the view that the earlier the onset of the disease, especially under ten years of age, the greater the probability of mental failure, but that the small percentage of cases admitted to the colony over 25 years of age does not permit of any definite statement being made as to what occurs when the disease is late in onset.

SUMMARY AND CONCLUSIONS.

1. A total of 161 cases, which have been under my observation at the Colony for Epileptics, Chalfont St. Peter, has been used for the investigation.

2. The mental features of the interparoxysmal state have been divided for descriptive purposes into four classes, the first containing those epileptics without any obvious mental impairment and the fourth those with the highest grade of dementia.

3. The interparoxysmal mental condition is discussed in its several varieties and degrees, with special reference to the influence of sex, hereditary disposition, age at onset, and character, duration, and frequency of fits.

4. Sex has little influence upon the mental condition, but it may be stated in general terms that males are numerically more afflicted than females (91 per cent. of the former to 78 per cent. of the latter) but that the highest degree of dementia is somewhat more common in women than in men.

5. A family predisposition to epilepsy and insanity, although not necessarily militating against the retention of normal mental faculties, favours the supervention of some degree of mental impairment. A higher percentage with a hereditary history is found amongst those epileptics who show the profounder degrees of dementia, than amongst those who show merely impairment of memory or a normal mental condition.

6. The duration of the disease influences to some extent the mental condition. Mental impairment is less frequent when the fits have lasted for under five years, just as mental integrity is less commonly seen when attacks have persisted for ten or more years. But mental health and mental deficiency are observed in cases in which the disease has lasted respectively for over 20 years and for less than five years.

7. The age at the onset of the convulsions influences to some extent the subsequent mental condition, for the earlier the onset, especially during infancy and childhood, the less the probability of an unimpaired mental state.

8. The character and combination of the fits have an important relation to the mental condition, the profoundest degrees of dementia being most commonly seen when the major and minor attacks coexist. The petit mal seizures occurring alone are found with the lower grades of mental impairment. When the grand mal occurs alone mental health is as common as mental deficiency.

9. There is a direct association between the frequency of the fits and the mental state—the more frequent the seizures the greater the degree of mental impairment and *vice versâ*. Fits recurring in series are accompanied by a high grade of dementia.

10. The term "facies epileptica" is applied to the physiognomy characteristic of the disease in many epileptics. It is found more commonly with the higher grades of dementia but its existence is not limited to such cases, for it is observed in those with only impairment of memory as well as without any mental failure.

11. The view is upheld that the interparoxymal mental condition seen in most cases of epilepsy is one expression of the neurosis of which the fits constitute another; that the former is therefore not directly dependent upon the seizures and that the frequency and character-combination of the paroxysms in association with the degree of mental failure indicate the severity and intensity of the disease.

12. The following figures show the percentage frequency of the four classes of mental deficiency amongst the 161 cases used for the purposes of this paper: Class A, intellectually normal, 13·6 per cent.; Class B, with impaired memory, 31·6 per cent.; Class C, feeble-minded, 25·4 per cent.; and Class D, demented, 29·1 per cent.

Harley-street, W.

THE CARDIAC DULNESS IN CASES OF CANCER.[1]

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I WOULD venture in as few words as possible to draw attention to a physical sign which has, I think, hitherto escaped notice, yet one which, if my observations prove correct, should be found valuable in a considerable number of cases.

Some years ago in the routine examination of several patients with gastric cancer I observed that although no evidence existed of ordinary emphysema the area of cardiac dulness, mapped out in the recumbent position, was either much reduced or actually obliterated. In some of them where the dulness was obliterated the resonant note over the heart was, it is true, slightly higher pitched than over the lung but it was definitely resonant, not dull. The reduction or obliteration of the cardiac dulness was sometimes associated with a rather surprisingly small and soft pulse.

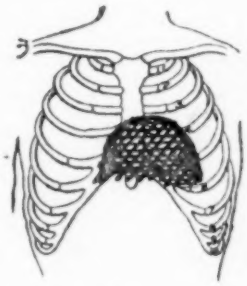
Since my first observations I have often noticed this curious physical sign and some time ago I became so sure

[1] A paper read before the Royal Medical and Chirurgical Society on March 8th, 1904.

that it suggested cancer that I risked the diagnosis of cancer on the strength of it where otherwise the evidence was inconclusive and in five consecutive cases the diagnosis proved correct.

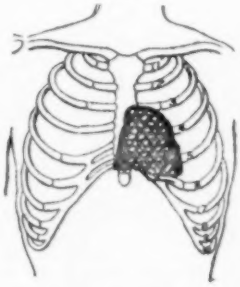
The reduction or obliteration of the dulness was observed, as I have said, in the recumbent position. It is necessary to insist on this point because our text-books do not clearly

FIG. 1.



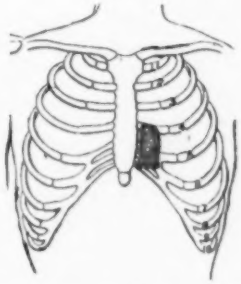
Normal cardiac dulness in the upright position.

FIG. 2.



Normal cardiac dulness in the recumbent position.

FIG. 3.



Cardiac dulness in a case of cancer where it has not been yet obliterated.

recognise the differences in the physical signs of the heart which exist in the recumbent and upright positions. As the result of many observations on healthy and diseased hearts I have found that the heart dulness alters considerably with change of position. Figs. 1 and 2 illustrate the change in the cardiac dulness which usually occurs when a healthy adult changes his position from the upright to the recumbent. Fig. 3 illustrates the reduction in the recumbent dulness in a case of cancer where it has not been altogether obliterated. The following cases illustrate the general usefulness of this physical sign, being instances in which a diagnosis of cancer was arrived at partly by means of it.

CASE 1. *Pain; vomiting; moderate loss of weight; no tumour; loss of cardiac dulness; operation; gastric cancer.*—A man, aged 42 years, a labourer, complained of epigastric pain relieved by food. This had come on six months previously but disappeared under treatment. It reappeared two and a half months before his admission to hospital, accompanied by flatulence and headache. Three weeks before his admission he began to be sick, but more after fatigue than after food. Once only he noticed a very little blood after much retching. He was not at all wasted in appearance but said that he had lost flesh. There was almost no cardiac dulness, although there was no indication of ordinary emphysema. His chest was of normal shape and expanded well on inspiration. There had been no winter cough and there had been no breathlessness. Examination of the stomach contents after a test meal showed absence of free hydrochloric acid and presence of lactic acid. No tumour could be felt. I advised laparotomy, hoping that early operation might reveal a cancer which could be removed. My colleague Mr. J. D. Harris found a cancer of the anterior wall of the stomach but considered that its extent and attachments rendered extirpation impossible.

CASE 2. *Profuse hæmatemesis; loss of cardiac dulness; rapid wasting and development of a tumour.*—An elderly woman, after some weeks of indefinite gastric symptoms, was seized with a profuse hæmatemesis. She was stout and her appearance gave no suggestion of malignant disease. There was no evidence of emphysema, but her cardiac dulness was absent. The bleeding having been arrested feeding by the mouth was resumed as quickly as possible, but she wasted exceedingly rapidly; and Dr. E. S. Pollock, with whom I had seen her, tells me that before death a well-marked tumour could easily be made out in the region of the stomach. A necropsy could not be obtained.

CASE 3. *Wasting; tumour; loss of cardiac dulness; death; necropsy; gastric cancer.*—A woman, aged about 45 years, was seen by me with Mr. J. Miller. She had been losing flesh and a tumour had developed to the left of the umbilicus and a little below it. She had obviously no emphysema but her cardiac dulness had disappeared. I decided that the tumour was a pyloric cancer and this diagnosis was found correct by Mr. Miller who performed a necropsy.

CASE 4. *Dysphagia; absence of cardiac dulness; subsequent paralysis of the right vocal cord; death; necropsy; cancer of the œsophagus.*—A man, aged about 45 years, was seen by me with Mr. B Dyball. He was then complaining of difficulty of swallowing which had been coming on gradually. He was a well-nourished but highly nervous man. An aneurysm seemed exceedingly improbable in his case I passed a No. 21 bulbous œsophageal bougie. This was gripped once or twice but the grip relaxing before gentle steady pressure the bougie passed fairly easily into the stomach. It appeared uncertain whether the case was one of cancer or spasm. He had no emphysema, the chest expanding well, but the heart dulness had entirely disappeared. The pulse, too, for a man of his appearance, was surprisingly small and soft. I suspected cancer but deferred a definite opinion until I had seen him again. A couple of weeks later Mr. Miller, who was looking after him in Mr. Dyball's absence, asked me to see him. His voice had become hoarse. I found paralysis of the right vocal cord. The diagnosis of cancer was then definitely made. On the patient's death Mr. Miller made a careful post-mortem examination and found two broad cancerous areas in the œsophagus. The heart was of normal size but the lungs completely overlapped it.

CASE 5. *Dysphagia; loss of cardiac dulness; death; necropsy; cancer of the œsophagus*.—A man, aged 35 years, came to hospital complaining of difficulty of swallowing. There was no emphysema but the cardiac area of dulness was reduced to one inch in breadth at the level of the fourth costal cartilage. The pulse was extremely small and soft. Cancer of the œsophagus opening into the trachea was discovered post mortem.

CASE 6. *Intestinal obstruction; loss of cardiac dulness; operation; cancer of the descending colon.*—An elderly woman was seen by me for the first time on the operating table. She had intestinal obstruction and there was a question as to whether this was caused by a cancer of the descending colon. Owing to the abdominal distension it was impossible to arrive at any conclusion by palpation. There was absolute loss of cardiac dulness and I ventured to predict that a cancer would be found. In the course of the colotomy an extensive cancer was discovered in the colon above the sigmoid flexure.

These six cases illustrate sufficiently the usefulness of this physical sign as an aid to diagnosis in certain cancerous cases. My experience with regard to it lies chiefly amongst cases in which some part of the alimentary canal is involved. Whether it is equally frequent in cases of cancer of other parts, such as the breast, I am unable to say. I have seen it in breast cases but I have also found it wanting in these when I should have expected it to be present. Its diagnostic value in cases where it occurs depends, of course, on its absence in other conditions. I have looked for it carefully in a very large number of non-cancerous cases, with or without wasting, and with or without a resemblance to cancer as regards symptoms. So far as my experience goes it is very uncommon to find the heart dulness lost or markedly reduced in area in non-cancerous cases where emphysema can be excluded, but heart dulness is not invariably present in non cancerous cases any more than it is invariably absent in cancerous cases. All one can claim for the sign is that when present in a doubtful case it is

highly suggestive of the presence of cancer and when absent at a late point in the case its absence is somewhat suggestive of the absence of cancer.

With regard to the period of the loss of cardiac dulness in a cancerous case one may say that it may precede cachexia, pronounced wasting, or the loss of skin elasticity which is often obvious, especially in the abdominal skin, in abdominal cancer cases. Unhappily, it does not seem to be usually so early a symptom as to make a practical difference in the date of attempts at extirpation of the disease. Although it has, perhaps, enabled me more than once to suggest an exploratory operation earlier than I should otherwise have done I have as yet only met with one case in which *absence of cardiac dulness* has helped on a successful removal of the growth.

In assessing the value of absence of heart dulness in any given case one would, of course, take into account not merely emphysema but any cause capable of withdrawing the heart from contact with the chest wall, such as the retraction of adhesions in the back of the pleural cavity. Conversely, in assessing the value of a normal heart dulness where cancer is suspected, one would naturally consider causes which might prevent the dulness being decreased, such as enlargement of the heart from any cause, pericardial effusion, retraction of diseased lungs, adhesions to the front of the chest, or pressure from behind pushing the heart forwards. The following three cases illustrate the presence of a normal heart dulness in non-cancerous cases where cancer has been suspected.

CASE 7. *Chronic jaundice; wasting; pain; cardiac dulness normal; operation; no cancer; recovery.*—A woman, aged 49 years, had had pronounced jaundice for nine months, occasional severe pain in the right hypochondrium, especially after food, occasional vomiting, and considerable loss of weight. In 12 months she had come down from 11 stones 8 pounds to 9 stones 12 pounds. The liver was uniformly enlarged. There was no ascites. The motions were persistently clay-coloured. The appetite varied. Under medicinal treatment the pain and sickness lessened, the jaundice slightly decreased, and she gained weight slowly. Three months later I was sent for to see her by her medical attendant, Mr. H. E. Goulden. She had had a very severe attack of pain and vomiting. She had become thin again. The heart dulness was rather larger than normal, although cardiac and renal disease were absent. I advised operation with a view to the removal of a possible gall-stone in the common bile-duct. The possibility of cancer was discussed and I decided against it. Mr. Russell Coombe operated and found no cancer. No gall-stone was discovered, but as a result of the manipulation of the bile-duct some obstruction was evidently removed as the patient has made a complete recovery, her jaundice having disappeared.

CASE 8. *Jaundice; wasting; normal heart dulness; recovery.*—An elderly woman, very thin and sallow, almost cachectic-looking, with pronounced jaundice and a history of loss of weight, was seen by me with Mr. Miller. Her history was most difficult to elicit and the duration of the jaundice was doubtful. The liver was enlarged and tender. The cardiac dulness was of ordinary size, and no cardiac or renal disease existed. The case strongly suggested cancer, so strongly that I did not feel justified in deciding definitely against it, but on the strength of the broad heart dulness I gave more hope of recovery than I could otherwise have done. Under treatment the jaundice disappeared, the patient gained flesh, and recovery now appears to be complete.

CASE 9. *Abdominal tumour; cardiac dulness normal; operation; "caseous kidney."*—This patient, a man in middle life, was seen by me after the exploratory operation. The broad cardiac dulness would have, I think, decided me against carcinoma.

It would, no doubt, be rather rash to lay great stress on the absence of reduction of the cardiac dulness but, as a matter of experience, its absence seems to me to have, as in these three cases, a certain value of its own. The following case, however, shows that a normal cardiac dulness may persist even to the end of a case of gastric cancer, though its persistence in such a case is, I think, very uncommon. Usually, when the heart dulness is normal in the early stages it becomes greatly reduced or obliterated towards the end. The absence of reduction of the cardiac dulness in this case is particularly interesting, as the growth was exceptionally circumscribed and chronic in character.

CASE 10. *Pyloric obstruction; great wasting; normal cardiac dulness; death; necropsy; small hard cancer.*—A man, aged 46 years, had been vomiting profusely on and off for about nine months. Six months before I saw him a diagnosis of non-malignant pyloric obstruction had been made in America and he had been taught to wash out his stomach daily. In view of an old history of severe pain near the pylorus it was possible that the obstruction might be due to the cicatrisation of an ulcer. He was extremely thin but I could discover no tumour. The cardiac dulness was normal. I advised such treatment as seemed necessary to stop the sickness and to promote gain in weight and directed that as soon as his condition was somewhat improved operation should be undertaken, either gastro-enterostomy or, if a cancer existed and seemed removable, pylorectomy. His sickness ceased and in five weeks he put on nearly a stone in weight. Unfortunately the latter half of my advice was not carried out and he came under my care again when his old symptoms had returned and when his condition made operation impossible. At the necropsy the pylorus was found stenosed and indurated but not enlarged in its outside dimensions. A slowly growing, very circumscribed cancer spread from it a short way into the gastric wall. Only one or two neighbouring glands seemed affected. The growth evidently was one of slight general and local malignancy, the patient having died chiefly from its mechanical effects.

The following case was one in which the cardiac dulness, normal when first examined, slowly decreased in size under observation.

CASE 11. *Pain; wasting; cancer of the stomach at the œsophageal orifice; gastrostomy; cardiac dulness slowly decreased.*—The patient came under my care in hospital. My colleague, Mr. A. C. Roper, performed gastrostomy and found a large cancer growing into the stomach at the œsophageal orifice. The heart dulness was then normal. During the patient's quiet life in hospital after the operation I noticed that the area became slowly but steadily smaller.

In non-cancerous cases I have seen the cardiac dulness markedly reduced in three instances only. I do not think I have ever seen it lost. One case was a woman with a large uterine fibroma. She was seen two years ago and is now well. The second was a case of chronic diarrhœa which I had only a short time under observation and believe to have been tuberculous. The third was a man with chronic gastritis who is much better at present, 18 months having elapsed since I saw him.

The cause of this curious physical sign has, of course, been a matter of interest to me. At first I fancied that the reduced area of dulness might be accounted for by the reduced size of the heart, because the heart is supposed to waste disproportionately quickly in cancerous patients. But a few post-mortem examinations made this theory untenable. The heart was not strikingly small—one heart was rather over the average in size, I should say—but in each case the lungs met, or nearly met, over it. The encroachment of resonance on the heart dulness was thus easily explained. But it is less easy to explain this forward movement of the lung edges. Perhaps that may be best accounted for by supposing that, just as in many cases of cancer, of abdominal organs especially, the skin of the abdomen becomes strikingly inelastic, so a similar loss of elasticity may occur in the lung structure, whereby even ordinary breathing can cause a sort of false emphysema in consequence of which the edges of the lungs gradually close over the front of the heart. If this be the true explanation it will account for the fact that in the earliest stages of cancer the sign is not present and for the further fact that in sarcoma, which does not affect skin elasticity as cancer does, I have so far failed to find it.

In conclusion, I would sum up thus the result of my observations. Putting aside cases where special causes exist, either for the obliteration of the heart dulness or for the prevention of such obliteration, the following seem to be true: 1. Great reduction or obliteration of the normal cardiac dulness is common in cases of cancer, particularly in cancers of the alimentary canal and in their late stages. 2. This loss of cardiac dulness does not seem to be found in the earliest stages of a cancerous case but may precede cachexia, marked wasting, and loss of skin elasticity. 3. It is rarely observed in non-cancerous cases. 4. It is rarely absent in the later stages of cases of cancer of the alimentary canal. 5. It does not seem to occur in cases of sarcoma. 6. In doubtful cases its presence is highly suggestive of cancer; its absence is slightly suggestive of the absence of cancer, if the symptoms under consideration have lasted for several months. I should like to express my indebtedness to

my friend Mr. Miller for the great help he has given me in watching cases to their conclusion and for the careful necropsies he has made to confirm our diagnoses.

Exeter.

A CASE OF REMOVAL OF A POLYPOID GROWTH FROM THE BASE OF THE SKULL AFTER A PRELIMINARY EXCISION OF THE UPPER JAW.

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THE removal of a polypoid growth when springing from the base of the skull and involving the pharynx more than the nasal fossæ is often a matter of considerable difficulty, as is proved by the fact that various methods of operation, some of which are associated with the names of Nélaton, Rouge, and Langenbeck, have been devised for this purpose. When the growth is of dense consistence and sessile, with an extensive attachment to the bone, a preliminary excision of the upper jaw affords the best access to it and also the most effectual means of controlling hæmorrhage, which is often very free during the process of removal. If the orbital plate of the superior maxilla is left and an obturator is afterwards fitted to the roof of the mouth the resulting deformity is very slight. These points are well illustrated by the following case.

The patient, a young man, aged 22 years, came under my care in June, 1903, suffering from a naso-pharyngeal polypoid growth. He had previously been under the care of Dr. A. Hodgkinson of Manchester who had operated upon him in May, 1902, and again in the following October, on each occasion removing through the nostril and from the mouth a growth originating in the same situation. As it had twice recurred Dr. Hodgkinson asked me to see the patient in consultation with him and then transferred him to my care, as he was of opinion that a more radical operation was now necessary in order to insure its complete removal. When the patient came under my observation there was complete obstruction to nasal respiration. The growth could not be seen from the anterior nares, but it was apparent from the mouth, depressing the soft palate and projecting below it in the form of a globular tumour with a smooth surface. On palpation it was found to be lobulated and of very firm consistence, connected with the base of the skull by a broad attachment and completely filling the upper part of the pharynx as well as involving both nasal fossæ. In addition to the discomfort from the nasal obstruction, the patient was beginning to suffer from severe headache and great mental depression; it had been noticed of late that both eyeballs were becoming somewhat prominent, otherwise there was no external disfigurement.

On June 23rd the growth was removed in the following way, Mr. A. H. Burgess and Dr. W. H. Richardson of Preston, the patient's medical attendant, assisting me, the anæsthetic being administered by Mr. A. Wilson. The soft palate was first divided in the middle line in the hope that this procedure would allow of the application of an écraseur round the base of the tumour. This being found impracticable owing to its broad attachment, it was resolved partially to resect the left superior maxilla, to turn it outwards with the overlying soft tissues, and then having removed the growth, if this was practicable, to replace the jaw. The usual skin incision was made, commencing above at the inner angle of the eye and carried round the nose and through the centre of the lip. The left half of the soft palate was then separated posteriorly and the bony connexions of the jaw having been divided it was raised and turned outwards. As it was still found that there was insufficient room to gain free access to the base of the tumour the entire jaw was excised with the exception of the orbital plate. By this means the attachments of the tumour were freely exposed and its removal was then effected by means of a gouge, the growth being forcibly stripped off the base of the skull. In doing so the sphenoidal sinuses were opened. The detachment of the tumour was attended by very free hæmorrhage which was arrested by sponge pressure and by plugging firmly with strips of gauze. The two halves of the soft palate were then sutured together and the skin incision was closed. As regards the after-progress of the case, both wounds readily healed and the patient rapidly recovered from the operation, being able to leave the home where it had been performed on the seventeenth day.

At the present time, nine months after its performance, the patient enjoys excellent health and is free from any evidence of a recurrence of the growth. The scar on the face is hardly perceptible and the cavity left by the removal of the jaw has greatly contracted and filled in with a deposit of fibrous tissue. The opening on the roof of the mouth is closed by a plate, to which a set of artificial teeth are attached, so that articulation and mastication are in no way interfered with.

A microscopic examination of the growth showed a fibrous structure but extremely cellular in places, the appearance suggesting that it might soon become sarcomatous.

Manchester.

A CASE OF CARCINOMA PROBABLY ORIGINATING IN RETAINED TESTIS.

By W. SYDNEY DARBY, M.A., M.B., B.C. CANTAB., L.R.C.P. LOND., M.R.C.S. ENG.

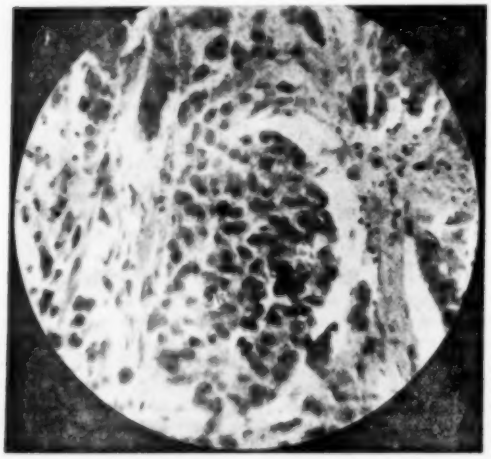
THE patient at the time of his death early this year was 24 years of age. He had a congenital left inguinal hernia and the testis was undescended on that side and could not be palpated. The penis was hypospadic. He had a rupture of one of the adductors in the right thigh, due to an accident some years previously. His body was of a slight but athletic build and his mental capacity was fully up to the normal standard. His general health previously to the onset of his disease had been excellent. He first became ill about the middle of 1902, complaining of a general weakness, pain in the back of the thighs, and œdema of the right leg (this œdema subsequently disappeared), and he went to the seaside in July of that year for the benefit of his health. There it was discovered that he had a tumour in the abdomen. When I first saw him in the autumn of that year the tumour was of about the size of a large cocoanut. It was hard and smooth, firmly fixed to the lumbar spine, and slightly larger on the right side. The pelvis was free. There was marked enlargement of the superficial abdominal veins. From that time onwards the tumour gradually increased in size, more rapidly in the earlier months than in the later. From being smooth it became largely irregular and was always extremely hard and firmly fixed. As it grew it involved the lumbar plexus on the right side, causing intense pain in the right lower limb and subsequently loss of knee-jerk. About a month before death the left knee-jerk was beginning to be exaggerated. Never at any time was there any sign of the kidneys being involved or of pressure on the ureters. The diaphragm was pushed up only very slightly and did not interfere with respiration. No secondary growths could be discovered during life. Several distinguished surgeons in London saw the patient and the diagnosis to the end was retroperitoneal sarcoma, probably of the retained testis.

A full post-mortem examination was unfortunately out of the question, but I was allowed to open the abdomen and to cut a piece off the tumour. This was done at the patient's house without any facilities for the work, so that a more extensive examination could not be made. The tumour was of a pearly-white colour, occupying the greater part of the abdominal cavity and adherent by a broad base to the lumbar spine. There were no secondary growths in the liver.

I sent the specimen to the Clinical Research Association in London where some excellent sections were prepared. Mr. J. H. Targett in explaining the sections said: "The structure is that of a soft carcinoma (not sarcoma) composed of polyhedral cells and the tissues are dotted over with small calcareous particles which are called 'psammoma grains.' This type of growth most commonly arises in the hilum of the ovary and may burrow beneath the peritoneum." Later, with fuller details of the case, he said: "It seems not improbable that the disease originated there [i.e., in the

undescended testis] and that the abdominal tumour was chiefly due to secondary growths in the lumbar glands. On examining the sections again I am still disposed to call it a soft carcinoma in spite of the youth of the patient and I think the sections are from a secondary growth in the lumbar lymphatic glands. There is certainly lymphoid tissue in the stroma of the growth and it cannot therefore be a primary growth in glands. Carcinoma of the testis does occur in young subjects but I have never met with these calcareous granules in any tumour of the testis previously examined."

Sir George Brown, C.B., was good enough to take some photographs of the sections for me. The different degrees



of enlargement show very clearly the structure of the growth and the character of the cells. He also made some lantern slides from the negatives which showed everything even more clearly. The calcareous particles mentioned by Mr. Targett, which I do not see in the photograph, were very clear in the greater enlargement with the lantern. A large number of them had a circle of light round them as if they were encapsuled in some substance.

Harrow.

DILATATION OF THE HEART.[1]

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AMONG the many and varied problems presented to us by cardio-vascular disease there is none that compares in general interest and practical importance with the elucidation of the precise conditions which determine the occurrence of dilatation of the heart. No doubt the vital and mechanical principles which underlie the production of cardiac dilatation are in a general way more or less well understood, but the exact mode of operation of the determinant forces is still a matter of speculation. In its purely mechanical aspect the question presents little or no difficulty. The complexity of the problem arises mainly from the fact that with our present knowledge we are unable to gauge with anything like accuracy the influence both in kind and amount that is exerted by the neuro-muscular factor concerned in the production of dilatation of the heart.

In this paper an attempt will be made to show that all forms of cardiac dilatation have fundamentally a common mode of origin, inasmuch as it will be contended that they all depend primarily on an absolute or relative diminution or loss of the muscular tone of the organ. Furthermore, whatever may be the merits of this hypothesis I have little doubt that I shall be able to demonstrate that its application in the pathogenesis of many forms of dilatation of the heart adds materially to the simplification of the problem of causation.

The exposition of the thesis advanced in this paper does not call for a detailed consideration of the conditions under which dilatation of the heart is observed. These conditions are well known and the factors concerned in their production will be referred to as occasion demands in the course of the development of the argument.

Dilatation of the heart is usually considered to be of two kinds according as it arises in connexion with certain forms of valvular disease or is observed in association with absolute or relative functional inefficiency of the cardiac muscle, and it will be convenient for the purposes of the present discussion to adopt this division of the subject. The intelligible presentation of the hypothesis with which we are concerned in its application to these two forms of dilatation will be greatly facilitated by a few preliminary observations on cardiac physics.

It has been shown experimentally that under normal conditions the output of blood from the left ventricle into the aorta at each systole is remarkably constant in quantity, and since this result is obtained in the face of varying aortic pressures it follows that the heart is capable of increasing or decreasing the amount of work it performs in accordance with the requirements of the circulation. Manometric measurements have demonstrated that when operating against a high aortic pressure both the maximal and average intra-ventricular pressures are higher than when the ventricle is contracting against a low aortic pressure: in other words, the heart copes with heightened blood pressure by an increased display of energy. The work of the heart is largely determined by the degree of diastolic distension of the ventricle which, speaking generally, varies with the amount of blood that remains in the ventricular cavity after the completion of the systole. Roy and Adami have shown that the ventricle does not empty itself completely at each systole, so that at the end of its contraction the chamber contains a measure of blood which varies considerably in amount under different conditions. Provided the ventricular output remains unaltered the operation of diastolic distension is to increase the quantity of residual blood in the ventricle at the end of systole for the following reasons, which I quote from Sherrington's account of the subject in Allbutt's "System of Medicine." "The pressure on a unit of surface remaining the same the total intra-ventricular pressure will vary approximately as the square of the radius of the cavity if the cavity be taken as approximately spherical. Thus Roy and Adami have pointed out that distension of the ventricle means not only increase of the tension of the muscular fibres but also increase of the lateral pressure on their surface in proportion as the square of their increase in length. But as they further pointed out the content of the cavity increases as the cube, and the muscle fibres, in order to expel the same constant quantity of blood from the dilated as from the undilated ventricle, need to shorten to a relatively less extent than was required of them before. The effect of diastolic distension is, therefore, if the output from the ventricle at each systole remain the same to leave a larger residuum of blood in the ventricle at the end of systole."

Now distension of the ventricle means the stretching of its muscular walls which in accordance with the general physiological law that governs all contractile tissues is within certain limits a stimulus to increased functional activity. The display of increased functional activity is shown by the performance of a greater amount of work (lift × load) and does not necessarily imply any additional shortening of the muscle. In point of fact the amount of shortening is usually less when a muscle is considerably stretched than when it is only slightly extended. At the same time it must be borne in mind that so far as the reduction in size of the chamber by a given volume is concerned the largely distended ventricle is at an advantage as compared with the slightly distended ventricle inasmuch as, for the reasons already given, a smaller amount of shortening suffices to produce this effect in the former than in the latter case. Other things being equal the amount of blood expelled at each systole by the largely distended ventricle should be increased as compared with the normal output and experimental investigation has shown that this result is actually obtained. It does not, however, necessarily follow, as Sherrington points out, and this is the crux of the

[1] A paper read before the Watford Medical Society on March 11th, 1904.

whole problem, that the wall of a largely distended ventricle is during diastole more highly loaded—that is, under greater tension—than the wall of the ventricle that is but normally distended. The tensile properties of the ventricular wall are determined and limited by the degree of its elastic reaction. Tension under the conditions with which we are concerned means the stretching of the wall of the heart against elastic resistance. The elastic resistance in the case of the ventricular wall is provided by the tonus of the cardiac muscle, which, therefore, regulates the tension of the muscle fibres and hence to a large extent the force of their contraction. It will thus appear, as Clifford Allbutt has remarked, that tension and tone bear something like an inverse relation to one another in that they are mutually provocative and antagonistic.

The paramount importance of the influence that is exerted by the cardiac tonus in the maintenance of diastolic distension within physiological limits and the prevention of dilatation of the heart is now readily appreciated. Thus so long as the tonus of the heart is unimpaired not only is undue diastolic distension restrained and the amount of residual blood at the end of systole restricted, but the ventricular wall is stimulated to a more vigorous contraction by the increased tension of its muscle fibres. Moreover, in these circumstances the ventricle is at a mechanical advantage, inasmuch as the smaller the cavity of the chamber the greater is the power of its contracting walls to propel their charge into the aorta, for, as Dr. Robert H. Woods has pointed out, the blood pressure inside a contracting cardiac chamber varies inversely as the radius of the chamber. On the other hand, with diminution or loss of the cardiac tonus not only is diastolic distension inadequately checked and the amount of residual blood increased but the ventricle partially or wholly lacks the stimulus to more vigorous contraction that is derived from tension of its wall (since the tension of the ventricular wall is diminished or lost), and, moreover, the chamber acts for the reason just given at a mechanical disadvantage. The wall of the ventricle consequently becomes stretched and its cavity dilated and these conditions tend to increase and to become perpetuated. Apart from the restoration and reinforcement of the cardiac tonus by hypertrophy the ventricle, even under the disadvantageous conditions just sketched, is able until its reserve power of contractile energy becomes exhausted to maintain the circulation more or less imperfectly for long periods of time. Inasmuch as tone is a later acquired and more highly specialised attribute of muscular tissue than contractility it follows from the operation of a well-recognised physiological law that the former property is more readily and profoundly affected by any interference with function than the latter. It follows, therefore, that the ventricle under the stress of long-continued overwork or under the manifold conditions which lead to interference with its nervous mechanism or nutritional integrity would lose its more highly specialised property of tone long before its primitive and inherent attribute of contractility. Herein, as I have attempted to explain, lies the initial and fundamental disability of the ventricle when from any cause it becomes unable either relatively or absolutely to carry on the work of the circulation. In this connexion I would more particularly insist on the importance of the nervous factor that is concerned in the production of cardiac dilatation by reason of the paramount influence exerted by the nervous system in the maintenance and regulation of muscular tonus. The beneficial operation of a cheerful disposition, the harmful effect of depression, the influence of joy, grief, anger, and the like, and the almost inexplicable variations that occur in the condition of the heart from day to day in cases of cardiac dilatation, are in the light of altered cardiac tonus readily explained. In order to avoid unnecessary repetition the argument has thus far been developed in relation to the question of the method of production of dilatation of the left ventricle only, but it must be clearly understood that the reasoning employed applies, *mutatis mutandis*, with equal force to the other chambers of the heart. It would therefore be beside the point to elaborate our contention with respect to these portions of the organ.

We are now in a position to examine the part played by the cardiac tonus in the production of dilatation of the heart and by so doing to test the validity of the hypothesis which forms the subject of this paper.

In the case of that form of dilatation of the heart which is observed in connexion with aortic regurgitation the explanation of the mode of operation of the cardiac tonus presents little or no difficulty. Under the conditions which obtain in aortic incompetence the left ventricle has to withstand during its diastole the distending effects of the regurgitation blood-stream under the pressure of the arterial recoil. The total intra-ventricular pressure during diastole on a unit of surface is the resultant of the respective pressures which prevail at the aortic and mitral orifices and is, of course, enormously in excess of the normal. The magnitude of the pressure that is exerted by the arterial recoil is, perhaps, more readily appreciated under experimental conditions, for it has been shown in animals that if the aortic valve be suddenly rendered incompetent the aortic pressure is sufficient to produce aneurysm or even rupture of the wall of the unprepared heart. Rupture of an aortic cusp is occasionally observed in man as the result of strain or violence and is always followed by rapid dilatation of the left ventricle.

The strain imposed on the wall of the ventricle in the conditions ordinarily connected with the incidence of aortic incompetence comes into operation gradually and its magnitude is ultimately determined by the extent of the lesion and the state of the arterial blood pressure, but in any event it constitutes the chief source of overwork which has to be performed by the heart. In any circumstances, however, it is clear that the resistance to progressive and unlimited diastolic distension of the left ventricle in aortic regurgitation must be, and is, provided by an increase of the tension of the muscle fibres of the ventricular wall, and this, as I have already insisted, is initiated and regulated by the cardiac tonus. Dilatation would quickly get the upper hand of hypertrophy at the outset were it not that the ventricle falls back on its reserve power which temporarily staves off the distending effects of the lesion. This increased display of functional activity leads under favourable nutritional conditions to hypertrophy which restores and maintains the tonus of the ventricular wall up to the level of the requirements that are demanded by the increase of intra ventricular pressure. There is, no doubt, a further cause for hypertrophy in that the ventricle has to propel a greater quantity of blood at each systole, but this factor must be comparatively unimportant compared with the task of maintaining the tonus of the cardiac wall.

The reasoning employed with respect to aortic regurgitation applies, *mutatis mutandis*, with equal force in the explanation of the mode of production of the ventricular dilatation that is observed in connexion with mitral incompetence and also with pulmonic insufficiency. The conclusion therefore with respect to that form of dilatation of the heart which arises in association with valvular disease is that it depends fundamentally on relative insufficiency of the tonus of the cardiac muscle. In other words, the ventricle dilates because the normal tonus of its muscle fibres is unable to provide sufficient elastic resistance to cope with the distensile stress of the excessive intra-ventricular pressure during diastole.

The mode of development of dilatation of a cardiac chamber from functional inefficiency of its muscular wall affords a problem the solution of which is frequently a matter of very considerable difficulty. The production of this form of dilatation of the heart depends most commonly on the coöperation in varying degrees of two main factors either of which may, however, occasionally act alone. They are: (1) an increase in the work required of the heart consequent on heightened arterio-capillary resistance, valvular disease, overstrain, &c., and (2) impairment of the muscular power of the organ the result of structural disease of the cardiac walls or of nutritive neuro-muscular and other disturbances.

In normal conditions the heart may be regarded as an after-loaded muscle, that is to say, its load comes into play only during its contraction. The contractile energy displayed by the left ventricle or, for that matter, by any cardiac chamber at each systole is determined for the most part by the degree of tension of its muscular wall during diastole, and this, again, is regulated by the cardiac tonus. In other words, it is only through the operation of its muscle tonus that the ventricle is kept informed of the work that is required of it. The muscle tonus, though automatic in action, can be increased or decreased through the instrumentality of the central nervous system. Theoretically, an increase in the force of the ventricular contraction can be obtained by diastolic distension of its cavity or by augmentation of its tonus through nervous influences, and no doubt

either or both of these means can be brought into operation in practice. These provisions for the regulation and display of contractile energy in conjunction with the reserve power inherent in the cardiac muscle no doubt afford the ventricle a wide range of action within physiological limits. Temporary dilatation of the heart is, however, observed in apparently healthy subjects under the stress of violent or protracted exertion. The additional work imposed on the heart in these circumstances consists, speaking generally, in a transient rise of blood pressure with a largely increased diastolic distension of the ventricles. It seems hardly possible that the contractile energy of the ventricular walls reinforced by their reserve power can become seriously exhausted, more especially as the rise of blood pressure is largely, if not entirely, due to increased output from the ventricles. On the other hand, the tonus of the ventricular muscle must be severely taxed by the excessive diastolic distension, and if in addition the amount of residual blood is increased the conditions for the stretching of the cardiac parietes are no doubt temporarily fulfilled. The action of the fatigue products of muscular activity and also of nervous excitement and exhaustion on the cardiac tonus has also to be taken into consideration. The partial exhaustion of the cardiac tonus would be sufficient to lower the functional efficiency of the heart and to bring about the conditions for the incomplete emptying of the ventricles and for the production of the stretching of their walls and dilatation of their cavities. It must also be borne in mind that in these conditions the ventricles are at an advantage as regards their output with respect to the reduction in size of their cavities by a given volume and this circumstance must afford an additional barrier to the complete breakdown of the contractile energy of the heart. Provided the process does not proceed to the extreme limit of exhaustion of the cardiac tonus the removal of the cause is followed by recovery and restoration of the tonus and of the normal size of the heart.

In those cases, as, for instance, contracted granular kidney, in which increased peripheral resistance is the main factor concerned in the production of dilatation of the heart, the additional work imposed on the organ comes into operation gradually. It is conceivable in these circumstances that the tonus of the cardiac muscle increases, possibly through vaso-motor influences, *pari passu* with that of the blood-vessels, so that the heart gradually grows up to its additional work. Here hypertrophy would not only maintain the heightened tonus but would also provide for the display of increased contractile activity. The subsequent failure of the cardiac tonus, which for the reasons already given would precede the failure of contractile energy, would lead step by step to the yielding of the ventricular wall and to the degradation, by successive stages, of the functional efficiency of the heart up to the fatal event. Otherwise the additional work imposed on the heart would lead by increment of residual blood to increase of the tension of the ventricular wall through augmentation of the cardiac tonus and hence to hypertrophy which would maintain the tonus and amplify the force of the ventricular contraction. The final stages of the process would follow the course sketched under the preceding supposition. This interpretation of the course of events is, moreover, borne out by clinical observation, for the yielding of the ventricle is found to take place step by step and not continuously, which presumably would be the case if the heart gave way in the face of uninterrupted resistance. Acute renal disease is sometimes a cause of rapid dilatation of the heart. Here the sudden imposition of increased work on a weakened ventricle temporarily at least overcomes the cardiac tonus and the heart falls back on its second line of defence which, though it involves some degree of dilatation, gives the organ the time and, if conditions become favourable, the opportunity to recuperate.

The explanation of the mode of development of dilatation of the heart from impairment of its muscular power does not present much difficulty. Here the tonic function of the muscle fibres commences to fail before their contractile energy is seriously impaired, so that the functional efficiency of the heart is degraded step by step through the yielding of its walls. The process is, of course, assisted and consummated by the gradual failure of the contractile energy of the heart. This conception, moreover, is in accord with clinical observation inasmuch as it permits of oscillations in the degree of dilatation and hence of the functional efficiency of the heart—that is to say, the degree of dilatation is decreased or increased with a corresponding rise or fall in functional efficiency according as the influences operating on the cardiac tonus are favourable or the reverse. If dilatation of the heart depended solely on failure of its contractile energy it seems almost inevitable that the cumulative effect of arrears of work in conjunction with the operation of the initial cause of the cardiac failure must lead to a gradual and progressive yielding of the ventricular walls, but in point of fact this is not the case.

An interesting illustration of the working of the hypothesis which I have submitted is afforded by that form of dilatation of the heart which is associated with grief, anxiety, mental depression, and the like. There is abundant evidence of the influence exerted by the nervous system on muscle tonus and the conditions with which we are concerned lead to a reduction of this tonus throughout the body. The heart no doubt shares in the general fall of tonus and the effect on the cardiac wall must be a reduction of the tension of its muscle fibres with a consequent decrease in the display of its contractile energy. Residual blood increases and in the absence of a restoration of the tonus stretching of the ventricular wall and dilatation of its cavity supervene. This process unless checked by a re-establishment of the cardiac tonus may proceed to an irretrievable degree of dilatation and death. Thus, as Sir William Broadbent has remarked, it is almost literally true that people die from a broken heart. If, therefore, the argument advanced in this paper be valid it follows that dilatation of the heart from so-called incomplete emptying depends fundamentally on the same causes as dilatation of the heart from over-filling—that is to say, that both have their origin in absolute or relative loss of the cardiac tonus. It seems *a priori* improbable, having regard to the wealth of the cardiac reserve power, that dilatation of the heart can depend primarily on failure of its contractile energy. Moreover, if this were the case the dilatation, as I have already insisted, should be gradual and continuous, which, so far as clinical observation shows, is not in accord with the usual course of events. On the other hand, tonus is a less stable and more capricious attribute of cardiac muscle than contractility and is therefore more likely to be affected by functional disturbances and morbific influences of all kinds. Furthermore, the operation of a postulated fall or loss of cardiac tonus provides for the production of dilatation, while variations in the display of the function permit of oscillations in the degree of dilatation that is produced. Thus an increase of tonus augments the force and effectiveness of the ventricular contraction and diminishes diastolic distension, whereas a decrease of tonus lessens the force and effectiveness of the ventricular contraction and aids diastolic distension. It is through the agency of these influences, in conjunction, no doubt, with a greater or less degree of modification in the contractile power of the heart, that the amount of cardiac dilatation may vary from day to day and that the organ is enabled to pass through such a wide range of variation as regards the level of its functional activity. The conclusion therefore is that all forms of dilatation of the heart have a common mode of origin, which is found in an absolute or relative diminution or loss of the cardiac tonus.

A few contingent considerations remain which are of sufficient importance and interest to call for a brief notice. The mode of action of the so-called cardiac tonics in the light of the hypothesis advanced in this paper affords scope for speculation and inquiry. The influence exerted on the cardio-vascular system by these drugs, of which digitalis is the prototype, gives rise not only to an increase in the force and effectiveness of the cardiac systole but also to tonic contraction of the arterioles and capillaries in which, of course, the heart shares. It is no doubt to their influence on the cardiac tonus that the beneficial action of these drugs in the treatment of dilatation of the heart must be largely ascribed. For the reasons already given the increase of the cardiac tonus augments the force and effectiveness of the ventricular contraction and the hypertrophy evoked by this additional display of function—which, be it observed, takes place in two directions—maintains the tonus and amplifies the contractile energy of the heart. Cardiac depressants, on the other hand, such as aconite, &c., operate probably in the reverse way—that is, they lower the cardiac tonus and by this means give rise to dilatation of the heart.

In conclusion, it may be pointed out that the hypothesis under consideration has presumably a very wide range of applicability, for if it is competent to explain the mode of production of dilatation of the heart it is also competent to explain the mode of production of dilatation of other hollow

muscular viscera—as, for instance, the stomach, intestines, bladder, bronchi, and so forth. In the case of the stomach the question of over-feeding, more especially during the first 12 months of life, must through its effect on the gastric tonus have very important bearings on the ultimate size of the organ and on the condition of its muscular wall. The tympanites that is found in association with hysterical and typhoid conditions brings into prominence the influence that is exerted by the nervous system on the intestinal tonus. It is, however, impossible in a paper of this kind to do justice to the interesting and varied problems connected with the mode of production of dilatation of these viscera and I mention them with the object of stimulating inquiry and investigation along the lines suggested by the hypothesis which we have had under consideration.

Upper Berkeley-street, W.

INTRALARYNGEAL GROWTHS TREATED BY MEANS OF THE GALVANO-CAUTERY.

BY J. DUNDAS GRANT, M.A., M.D. EDIN., F.R.C.S. ENG. & EDIN.,

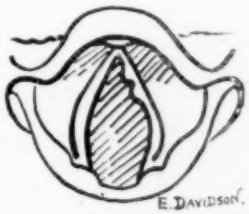
SURGEON TO THE CENTRAL LONDON THROAT AND EAR HOSPITAL, ETC.

THE final removal of the stump of an intralaryngeal growth is often as difficult as (to the expert) that of the main mass of it is easy. Oliver Wendell Holmes's happy analogy between the elaboration of the last few lines of a poem and the extraction of the last drops of oil out of a bottle is fairly applicable to the case in point. Such, at least, has been the experience of the writer. Many valuable forms of intralaryngeal forceps are at the disposal of the operator and I believe that the form devised by myself for cutting growths off the edge of the vocal cord, the description of which appeared in THE LANCET of June 3rd, 1893, p. 1323, has been in very general use for the intended purpose within the limits which the slightest consideration would impose. For growths on the upper surface of the cord it is, of course, inapplicable and for these the form devised by the late MacNeill Whistler is the most efficacious for those who have been accustomed to Mackenzie's instruments. These are available, also, for many growths in the anterior commissure, though here the snare (so strongly advocated by the late Lennox Browne) has its seat of election. Forceps with the tips bent forwards, according to the designs of Lambert Lack and Fitzgerald Powell, will often clear the anterior commissure when other instruments fail. The extirpation of the residual stump from which re-growth is very apt to take place often baffles instrumental interference as, for instance, when the growth is on the edge of the vocal cord, but so near the anterior commissure that there is no room in front of it for the anterior blade of clean-cutting forceps. Such was the case in two instances lately under my care and in them I found in the galvano cautery the means of effecting the final clearance.

CASE 1.—The patient was a comparatively young vocalist and actress whom I brought before the British Laryngological Association in July, 1894, having removed a small fibroma from the right vocal cord at the junction of the anterior and middle thirds. The removal by means of my own forceps was so complete that the patient was enabled to return to her avocation and continued to act and occasionally to sing up to November, 1902, when she came again to me on account of a return of her hoarseness. I found a fibroma on the same spot but more sessile than the previous one and I was able to effect only a partial removal by means of my forceps. I then lightly touched the spot with a fine galvano-cautery point on three occasions with the result that complete disappearance of the growth and perfect restoration of voice ensued. This has continued to the present day.

CASE 2.—The patient was a woman, aged 51 years, who had been practically voiceless for three years. I found a sessile fibroma occupying nearly the whole of the anterior third of the vibratory portion of the left vocal cord and protruding to a considerable extent into the glottic slit. After removal of the main mass by means of my forceps I reduced the growth to dimensions somewhat less than indicated in the figure.

The following is Dr. V. H. Wyatt Wingrave's report as to the microscopical structure:—"The growth consisted of a medullary part composed of fibrous tissue containing small fusiform nuclei with a few large oval nucleated cells (epithelioid) and also some large granular leucocytes. The matrix was homogeneous. The vessels (arteries) showed considerable thickening and were numerous. The surface



epithelium was very irregular in arrangement, being corrugated and in parts dipping into the subjacent tissues, but was not fimbriated. It was typical stratified squamous on the surface, the deepest layer being columnar. There was no suggestion of active mitotic nuclear change and no nest or pearl formation. In parts there was some vacuolation. Its nature may be considered as a fibro-papilloma."

The small remaining stump was sufficient to prevent the emission of conversational voice and the application of various astringents seemed to irritate the larynx without producing any diminution in the nodules. In spite of the difficulties in this particular case, to which I shall further allude, I succeeded in touching the stump with the galvano-cautery and after five applications effected its complete removal, the voice becoming clear and strong as it has remained till now (three months later) when the vocal cord is perfectly normal. I showed the case to the Laryngological Society of London in January of the present year.

The difficulties in this latter case were manifold. The patient was a somewhat rotund personage with an extremely protuberant "bust" and a short neck, so that there was little room for the hand of the assistant holding out the tongue and of the one holding the Mount-Bleyer or Escat tongue depressor, which the pendulousness of the epiglottis rendered necessary. In addition, the tongue was large in proportion to the size of the buccal cavity even when the artificial teeth were removed. It was difficult even to introduce the laryngeal mirror. Finally, the epiglottis was pronouncedly "pendulous" and only very fleeting views of the seat of the disease were obtainable. It must be stated to the patient's credit that her good-will and patience were most exemplary. The introduction of my forceps required the exercise of some force and the manipulation inside the larynx was necessarily carried out *à l'aveugle* in a way which would have been scarcely possible with a less guarded instrument. The use of the galvano-cautery had to be practised on totally different lines. For this the most complete illumination was necessary, so that the application should be made under the guidance of the eye. For this purpose I made use in the first instance of Mount-Bleyer's epiglottis lifter, the tip being placed in the vallecula in front of the epiglottis, the pressure therein causing this to rise up so that the anterior part of the glottis could be plainly seen. I found, however, that Escat's instrument caused less discomfort and in this particular case permitted of as good a view of the larynx being obtained. I was thus enabled, after cocainisation, to overcome the difficulties I have mentioned and to effect the application of the galvano-cautery.

The cautery itself must answer certain requirements. It must be of the curve and length appropriate for the particular spot in the particular case. For this purpose it should be introduced "cold" and modified in shape and length (of vertical portion) until it can be made to touch the exact spot with as little difficulty as possible. Again, it should be instantly responsive to the make and break of the current. I use Schech's handle and frequently renew the points which Schall carefully files down for me at the extremity till the incandescence and extinction are practically instantaneous. The extent to which the cautery has to be bent down is sometimes more considerable than would be anticipated. In Case 1 the bent-down portion was fully four inches in length, and I have at present under my care a patient on whose left vocal cord was a large sessile papilloma which I was unable to reach by means of

my longest laryngeal forceps, but which I have succeeded in reducing almost to a vanishing point by the use of the galvano-cautery bent down to as great a length. For such a small stump as I have described the lightest touch is all that is desirable and ought indeed to be much less than at the time appears sufficient. In addition to the destruction of a portion by the actual burning away of substance the subjacent part of the growth undergoes a certain amount of shrinkage. Complete burning away of the growth would therefore be attended by a risk of undesirable cicatrisation of the normal underlying structures.

I do not wish it to be inferred that in these manipulations I have never touched the normal neighbouring parts of the larynx. In Case 1 I certainly did avoid doing so; in Case 2 I more than once cauterised the superjacent portion of the ventricular band and also the opposite vocal cord. In the third case to which I have made reference the patient was exceptionally restless besides being absolutely intolerant of the "epiglottis-lifter" and I slightly cauterised the laryngeal surface of the epiglottis. As a rule I was able to confine the momentary cauterisation to the desired spot and in no instance did the involvement of the adjacent parts mentioned occasion anything approaching obstructive œdema or indeed any symptom beyond a slight increase of hoarseness, which rapidly subsided.

With the precautions I have mentioned I believe that we have in the galvano-cautery an instrument which might be more frequently employed for the purpose under consideration than appears to be usual.

Cavendish-square, W.

A NON-TOXIC PREPARATION OF IODINE.

BY V. H. WYATT WINGRAVE, M.D. DURH., M.R.C.S. ENG.,
PHYSICIAN TO THE CENTRAL LONDON THROAT AND EAR HOSPITAL.

BEING especially interested in the supplemental treatment of enlarged glands and adenoids with iodine, about seven years ago I made several experiments with preparations of that drug with the object of finding one which could be given internally in large doses for considerable periods without causing symptoms of iodism while exercising its specific effects on lymphatic enlargements. The late Mr. Martindale and the manager of Messrs. Morson and Sons were good enough to try several formulæ for me in their laboratories and finally succeeded in producing an easily-made compound in which iodine was loosely combined with an organic substance, rendering it fit for ready absorption without causing any irritation of the digestive canal and affording a high physiological activity without any evidence of intolerance. This preparation I have used ever since both in hospital and private practice, and having watched the effects have come to the conclusion that it has fully confirmed my first estimate of its value.

The formula which I now employ has been perfected for me by Mr. W. H. Martindale, is easily prepared, and is very palatable. The iodine is in loose chemical combination with tannic acid, since none can be demonstrated as free, yet it is sufficiently free to be given up readily to the tissues after absorption and consequently there is no chance of any local intestinal or gastric irritation, so often associated with the administration of *free* iodine. Such combination is one of a nature similar to that of oxyhæmoglobin. Formula:—iodine, 2½ grammes; tannic acid, 4 grammes; alcohol (90 per cent.), 38 cubic centimetres; syrup, q.s. to 75 cubic centimetres. The iodine is dissolved in the alcohol, the tannic acid and 30 cubic centimetres of the syrup are added, the solution is heated to just below boiling point until it affords no evidence of free iodine with the starch reaction (about 20 minutes), is then cooled, and the remainder of the syrup is added with flavourings. Each drachm contains two grains of iodine. It may be given in doses of from half a drachm to two drachms in water or wine before meals, according to age.

I have found that children tolerate it well and it has proved specially useful in cases of chronic lymphadenitis associated with, or independent of, enlarged tonsils and adenoids, especially when the enlarged cervical glands persist after tonsillotomy. It is further indicated in those children who possess but slightly enlarged faucial and pharyngeal tonsils in whom operation is contra-indicated or objected to. In atrophic rhinitis it has afforded gratifying results especially when combined with arsenic; also in simple bronchocele supplemented with the use of iodine oleate (1 in 9 of oleic acid) as a pigment.

Such an organic combination of iodine is by no means new as it was introduced many years ago in the form of a wine—"Vin Nourry"—but so far as I know no definite or simple formula suitable for prescribing purposes has been available. It is for this reason and for the very satisfactory results which it has afforded in a prolonged trial that I venture to recommend it.

Devonshire-street, W.

A Mirror OF HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proœmium.

THE FRENCH HOSPITAL, SHAFTESBURY AVENUE.

SIX CONSECUTIVE CASES OF DISEASE OF THE FALLOPIAN TUBES.

(Under the care of Dr. SEPTIMUS SUNDERLAND and Mr. EDMUND OWEN.)

FOR the notes of the cases we are indebted to Mr. Jehan M. Barlet, resident medical officer.

CASE 1. *Double tubo-ovarian abscess.*—A married woman, aged 39 years, who had borne no children, was admitted into the French Hospital on Oct. 8th, 1903, for pain in each ovarian region. She had had gonorrhœa and had been in the French Hospital two years previously with the same symptoms. On vaginal examination a semi-elastic swelling of about the size of a hen's egg could be felt on the right side, but nothing definite could be made out on the left, though she complained of more pain on that side.

Mr. Owen made a three-inch incision in the median line and finding the right ovary and tube enlarged removed them, the tube rupturing under the manipulation and pus escaping. The soiled viscera were carefully wiped over but no irrigation was employed. The left ovary and tube were also diseased and were removed. A drainage-tube was left in for 48 hours. The woman made an uninterrupted recovery.

CASE 2. *Double tubo-ovarian abscess.*—A woman, aged 32 years, who had been married ten months and had had no children, was admitted into the French Hospital on Nov. 11th, 1903, for pain over each ovary. For six months previously she had had pain in the right iliac fossa, there being a history of a diminution of the menstrual flow for two months, followed by an advance of the period by 15 days, lasting 15 days. Her husband had had gonorrhœa.

A three-inch median incision was made. The left tube was much dilated and the ovary was enlarged; they were removed. The right tube and ovary were then brought to the surface and also found to be diseased and were likewise removed. (On opening the tubes subsequently pus was discovered in each.) A drainage-tube was left in for 48 hours. She also made an uninterrupted recovery.

CASE 3. *Encysted purulent peritonitis secondary to pyosalpinx.*—A woman, aged 30 years, was admitted into the French Hospital on Jan. 20th, 1904, for abdominal pain. There was a large swelling in the right iliac fossa. There was a history of pains in the lower abdomen during six years; they had usually passed off with rest and douches. 12 days before admission she had been seized with severe pains and had passed a dark clot of blood per vaginam. She said that she had had a temperature going up to 103° and 104° F. and also that a large swelling had begun to form in the right lower abdomen. On admission she was looking ill; she vomited. The pulse was 124 and the temperature was 100°. The abdomen was distended, especially on the right side. There was a limitation of respiratory movements. On palpation a large swelling could be felt in the right iliac region, reaching

across the middle line; fluctuation could be obscurely obtained. Percussion showed that intestine lay over the upper part of the tumour. On vaginal examination a hard mass was made out against the right fornix, the uterus being pushed over to the left. By bimanual examination fluctuation was obtainable; the mass was fixed.

Mr. Owen opened the abdomen on the day following her admission by a median incision below the umbilicus. The small intestines were congested, covered with lymph, and adherent to one another, surrounding a collection of foul-smelling pus. The abdominal cavity was washed out with abundant hot saline solution and two large tubes were brought out by counter-openings, but the case seemed hopeless. The source of the pus could not then be discovered as all the tissues were closely matted together. The patient was very much collapsed after the operation but by stimulation she recovered from the shock. She died early on the following morning.

Necropsy.—The contents of the pelvis were matted together by adhesions and between the rectum and the uterus was an abscess containing about ten ounces of pus which had not been discovered at the operation. There was pus in the right Fallopian tube and ovary, and in the body of the uterus was a large, deep ulcer which encroached upon the opening of the right Fallopian tube. At one spot the wall of the bladder was ulcerated, leaving only the mucous lining.

CASE 4. *Ectopic gestation.*—A woman, aged 28 years, who had had two children, was admitted into the French Hospital on Jan. 15th, 1904, for pains in the lower abdomen on the right side. Her history was as follows: On Christmas Day, when walking with her husband, she was suddenly taken faint and had to be carried home. From that time she had been constantly losing blood. The pain continued and she had neuralgia down the inside of the thigh. She frequently vomited. There was no history of gonorrhœa. The temperature was normal. Examination showed that there was acute tenderness over the region of the right ovary, a resistance being distinguishable. The uterus was moveable and the os was capable of admitting the tip of the index finger. Against the right fornix a tender, moveable, semi-elastic swelling, of about the size of a hen's egg, could be distinguished.

Mr. Owen made a median incision, about four inches long, and introduced three fingers into the abdominal cavity. A smooth, non-fluctuating swelling was made out on the right side, slightly adherent posteriorly. On bringing it to the surface it was found to be glistening and dark purple. The tube was ligated close to the uterus; the broad ligament was tied off and the mass was removed. On cutting into it a large blood clot was found associated with a ruptured tubal gestation. There was also a small cyst of the ovary. The pelvis was wiped clean of blood and the wound was closed. A few weeks later she was sent to the convalescent home at Brighton.

CASE 5. *Right pyosalpinx; left suppurating ovarian cyst.*—A woman, aged 27 years, married, with no children, was admitted into the French Hospital on Jan. 15th, 1904. She had had no miscarriages. She complained of constant pain in the left iliac fossa. There had been no irregularity in menstruation except that during the last two months she had had three periods. A short time after marriage five years previously she had a thick yellow discharge associated with pains which had continued off and on during all these years. She had been persistently treated by douches and rest but without material advantage. Vaginal examination showed that the uterus was fixed and thrust backwards by an elongated mass on the left side, which was also fixed to the rectum and bulged against the left fornix. On the right side was a moveable, semi-elastic swelling of about the size and shape of a hen's egg and partly posterior to the uterus.

A median incision having been made, the right tube was found to be adherent to the surrounding tissues; these adhesions were broken through and the swollen and congested tube, thickly covered with recent lymph, was brought to the surface, tied off, and removed. The left tube was made out with difficulty, as it was concealed by, and was closely adherent to, the posterior surface of the uterus, the rectum, and the sigmoid flexure. These adhesions having at length been severed a mass of about the size of an orange was brought to the surface, secured, and removed. There was a good deal of oozing, the blood being mopped out with sponges soaked in a very hot saline solution. A Keith's tube was inserted and the abdominal wound was sewn up. The drain was removed after 48 hours, there being only a slight serous discharge obtained from it. The temperature remained normal and the pulse never rose above 84 per minute. On examining the masses removed the one on the right side proved to be a pyosalpinx, whilst the one on the left side had the appearance of an ovarian cyst which had suppurated. She made a rapid recovery.

CASE 6. *Right salpingitis and cyst in the broad ligament; left salpingitis.*—The patient, a widow, aged 24 years, was admitted into the French Hospital on Feb. 1st, 1904, for great pain in the right iliac fossa. She had had no children but had one miscarriage four years before. A week previously she had been wrestling and on the next day she felt an acute stabbing pain in the right iliac fossa, which doubled her up and, as she says, felt like a bearing-down pain. At the time of her violent effort she was in the middle of her monthly period, and after the attack of pain the flow increased very considerably, with the passage of clots. She had always been regular. The abdomen moved fairly well with respiration, except in the lower segment, where there was a slight resistance on the right side. Vaginal examination showed that the os was patulous and that the uterus was definitely enlarged and pushed over to the left side by a semi-elastic swelling which bulged down against the right fornix. It seemed to be of about the size of a small orange. Above this could be felt a distended tube. There was free discharge of blood from the uterus. Dr. Sunderland had seen her in consultation at her own house and, recognising the presence of an acute pelvic condition which evidently needed exploration, sent her into the hospital for operation. This was performed on the following day. Colonel C. H. Joubert, I.M.S., late professor of obstetrics at the Calcutta Medical College, was present at this operation.

A median incision having been made, there was found on the right side a dark and adherent mass which proved to be the distended Fallopian tube; below this a cyst was found as big as a small orange lying between the layers of the broad ligament in close connexion with the enlarged Fallopian tube. The cyst burst on being freed from adhesions, discharging a thin sanguineous fluid. The whole mass was tied off in sections and removed. On the left side a slightly enlarged tube showing evidence of salpingitis was found behind the uterus and removed. The oozing from the detached adhesions was stopped with sponges wrung out in hot saline solution. A Keith's tube was left in for 24 hours. The mass from the right side, which had appearances suggestive of an extra-uterine gestation, was sent to Dr. G. Leslie Eastes for examination who reported as follows: "This specimen shows the presence of thrombosed vessels, and free hæmorrhages in the walls of the tube, together with a large amount of granulation tissue. Chorionic villi have not been found, so that tubal gestation cannot be diagnosed. We must conclude that the intramural hæmorrhage was due to some acute condition supervening upon a chronic inflammatory process." The patient, who strenuously denied the possibility of ectopic gestation, made an uninterrupted recovery.

Remarks by Dr. SUNDERLAND and Mr. OWEN.—The misapprehension that gonorrhœa is not a very serious disease is widely spread. It has been argued that though it is a common affection of young adults one rarely hears of a man being permanently damaged by it, provided only he has escaped being the subject of organic stricture of the urethra and the various diseases of the bladder and kidneys which may depend upon it. But the surgeon who sees a patient with secondary gonococcal inflammation of the knee-joint or of a series of joints, and the physician who is called to advise in the treatment of a case in which a pyæmic affection of the pericardium has followed in the wake of a venereal urethritis, cannot fail to regard the primary disease as one of extreme potential gravity. But perhaps the saddest, as well as the most serious, of the complications of gonorrhœa are met with in the case of the married woman whose life is rendered miserable and uncertain by infection which was unwittingly communicated to her by her husband. The probability is that the man honestly believed himself to be, and was duly advised that he was, perfectly cured of his urethritis at the time of his marriage, when, as a matter of fact, gonococci were still present in the urethral canal. It is quite possible, moreover, that the wife was infected with the micro-organisms without realising that there was anything seriously amiss with her, that the area of incubation of the micro-organisms was chiefly confined to the interior of the cervix uteri, for instance, and that she had none of the usual symptoms of

gonorrhœal infection. It not infrequently happens that when the practitioner has asked all the questions which he deems it prudent to put to the wife, he leaves off his cross-examination without having obtained collateral evidence of her having been definitely infected, though the confessions of the husband and the circumstances of the case leave little room for doubt.

Of the four cases of pyosalpinx reported above, Nos. 1 and 5 gave a clear history of gonorrhœal infection; No. 3 had probably been a victim to it, and No. 2 might well have been infected from her husband. No. 3 is one of those sad cases in which infection spreads from a tubal abscess to involve the peritoneum in a fatal suppuration. Bacilli coli communes must have been present in myriads, the original tubal swelling having been probably infected from adherent intestine. The history of this case adds further support to the teaching of those who advise that in all cases in which the existence of a tubal abscess is suspected the tumour should be explored without delay by abdominal section, and then dealt with in the only possible way—that is, of course, by removal.

Another point for remark is that if in the process of being separated from the surrounding adhesions the cyst gives way and its foul contents spread themselves over the adjacent coils of intestine, the most practical manner of cleansing these is by the free use of dry absorbent sterilised swabs. Formerly it was very much the custom to deal with the soiled viscera by hot flushings, but though in cases where the pus was not sterile this method could not be depended upon to wash away all the germs it was certain to convey some of them to parts of the serous membrane which, up to that time, they had not reached. In operations in which the foul contents of an appendicular or a tubal abscess unavoidably find access to the serous covering of neighbouring viscera, is not the simple process of wiping the part clean with a soft dry sterilised swab as likely to prove efficient as the less convenient one of irrigation? In every case the surgeon should do his best to prevent the occurrence of any fouling, but if, notwithstanding, it does occur and the case turns out successful nevertheless, he must not ascribe all the credit for the happy result to the way in which he dealt with the straying pus.

What is the explanation of the favourable course which cases often run when the surgeon has concluded his operation with the full knowledge that pus has been left behind? It is possible that the escaping pus was sterile. In other cases where pus which contained bacilli escaped upon and contaminated the peritoneum and no worse results followed than a slight localised peritonitis, it is probable that the formation of leucocytes and plasma-cells on the peritoneal surface prevented the entrance of the poison to the system. Possibly, also, during the time that an abscess was forming an antitoxin was being prepared in the blood which sufficed to render harmless the occurrence of, or even to prevent, a localised peritonitis. Therefore, when there is no urgent indication for immediate operation it is advisable to prepare the patient for the operation by rest in bed, good feeding, and a course of ferruginous tonics so that the blood cells may be the better able to resist the ravages which might be caused by bacilli-laden pus if the tubes happen to rupture during the operation.

In 1899 Mr. A. G. R. Foulerton reported the results of 459 cases of salpingitis (including 16 cases investigated by himself) in which the pus had been examined by competent observers. In about 20 per cent. of these cases the gonococcus was discovered, in about 20 per cent. bacteria other than the gonococci were found (including the staphylococcus pyogenes albus, the bacillus coli communis, the bacillus tuberculosis, and the streptococcus pyogenes), but in the remaining 60 per cent. the contents of the tubes had been found absolutely sterile. He explained this absence of bacteria by the fact that many cases of pyosalpinx are not operated upon till a considerable period after the formation of the abscess, by which time the causative parasites have perished as the result of starvation or of being poisoned in a small closed cavity by their own excretory products. With regard to the 20 per cent. of cases in which other bacteria than gonococci had been found, in a certain proportion of them the bacillus discovered did not always harmonise with the etiology of the disease, for in some of them the pus had become sterile and had been secondarily infected with the bacillus coli communis from adherent intestine. It is thus impossible to determine from examination of the pus contained in the tubes the proportion of cases which owe their origin to gonorrhœa. But it is our opinion, judging partly from the records of Mr. Foulerton and partly from our own clinical experience, that the number of cases of pyosalpinx which owe their origin to gonorrhœa is considerably under-estimated and that the proportion given by text-books of a percentage of from 20 to 30 is far below the mark.

In a case of salpingitis arising during an attack of gonorrhœa when there is evidence that pus has formed in one or in both tubes the questions arise: Should the condition be dealt with per vaginam (through Douglas's pouch), as recommended by some surgeons, or by laparotomy? And, secondly, when should operation be undertaken? In our opinion cases in which incision and drainage of the tube through the vagina should be resorted to must be of very rare occurrence. When there are much matting and adhesion it must be difficult to insure that all the pus has been evacuated, and certainly it seems a more sound principle to remove the whole of the diseased tube by laparotomy, as in the case of intrapelvic abscess due to disease of the appendix cæci.[1] With regard to the time for operation, it is probably wise to allow the patient to get over the acute inflammatory attack and unless urgent symptoms should call for interference to wait for a few months until the virulence of the contents of the tubal abscess may have abated in order to minimise the risk of infecting the peritoneum. It is impossible to lay down definite rules, for the circumstances of each case have to be considered. Indeed, some of these cases if left alone get well without operation, the pus apparently becoming absorbed.

In conclusion, we would like to insist upon the importance of the careful and thorough treatment of gonorrhœa in females in its initial stage. This cannot be too strongly put forward when one considers the amount of suffering and the risk to life which may attend upon an apparently slight attack of the disease.

Medical Societies.

SOCIETY FOR THE STUDY OF DISEASE IN CHILDREN.—A meeting of this society was held on March 18th, Dr. Percy G. Lewis being in the chair.—Mr. Harold Burrows showed a case of Enlarged Liver and Spleen in a girl, aged 13 years. Six months previously laparotomy had been performed for supposed hydatid disease of the liver but the liver was found to be uniformly enlarged and smooth. There was no history of syphilis but as there were the remains of old retino-choroiditis in both eyes a diagnosis of syphilis had been made.—Dr. C. W. Chapman showed a girl, aged 12 years, who had suffered from Mitral Disease with recurrent attacks of Dilatation of the Heart. These had at first yielded to the ordinary remedies but later the dilatation and failure of compensation which were accompanied by orthopnœa were not relieved until solution of adrenalin was administered in five-drop doses every four hours. This was followed by steady improvement.—Mr. J. Keogh Murphy showed a case of Hæmatoma of the Parietal Bone in an infant, aged eight weeks, and a case of Double Pes Cavus in a boy, aged four years.—Dr. Leonard G. Guthrie showed a boy, aged 11 years, who for two years had been subject to peculiar attacks in which he would suddenly run to his mother, exclaiming, "Horrid smell." He would appear much agitated and distressed for a few moments, sometimes spitting and grimacing, and going through the action of trying to pull something out of his mouth. He would then behave "as if he were silly," running to persons in the room and trying to embrace them. After five or ten minutes of this behaviour he would become quiet, turn pale, shiver as if cold, seem exhausted, and lie down to sleep. Dr. Guthrie regarded the case as one of automatism with olfactory and gustatory auræ, a condition allied to epilepsy or megrim. Under treatment with bromide of potassium in eight-grain doses thrice daily the attacks diminished rapidly in frequency and severity.—Dr. Lewis commented on the large pupils and a tendency to exophthalmos in the patient.—Dr. E. A. Jones said that visual auræ were of two kinds, either of persons which were usually unpleasant, or of landscapes which were usually pleasant.—Dr Edmund Cautley showed a case of Multiple Congenital

[1] Brit. Med. Jour., Feb. 20th, 1904, p. 426.

Deformities in a girl, aged five years. She was one of 12 children, all the others being healthy and well formed. She was very small and intellectually deficient. Walking or standing had not yet been accomplished, although there was no indication of muscular or nervous lesion. The eyes were marked by notching of the upper lids, dermoid cysts on the conjunctivæ, coloboma of the iris and choroid, and choroidal atrophy. There were accessory auricles and macrostoma on the right side.—Mr. J. P. Lockhart Mummery said that the association of auricular appendages with the fissure of the mouth was interesting because those cases seemed to support the theory that the auricular appendages were developed around the outer end of a partly persistent inter-maxillary cleft, the anterior part of which was represented by the fissure of the mouth.—Mr. J. Howell Evans pointed out that the notch in the upper eyelids occurred at a point where there was a division between the nerve-supply of the outer two-thirds and the inner third, a situation often occupied by birth-marks and moles.—Dr. G. A. Sutherland showed a boy, aged eight years, suffering from Chronic Interstitial Nephritis and commented on the syphilitic origin of these cases although there was no history of that disease in the present instance. There was marked cardiac hypertrophy and the radial arteries were thickened. The urine was of low specific gravity and contained occasionally a trace of albumin and granular casts. There were no retinal changes.—Dr. E. P. Baumann showed a specimen of Early Parrot's Nodes from a child, aged two years. The nodes were in an early stage, being small, sharply limited, and still vascular. It was uncommon to find them developing at such a late age. The patient had well-marked signs of syphilis.—Dr. George Carpenter said that he regarded Parrot's nodes as definite evidence of syphilis and that the spleen would usually be found to be enlarged in such cases.—Mr. Sydney Stephenson read a paper on Congenital Word-Blindness in Children.—Dr. J. Porter Parkinson and Dr. Douglas Drew communicated notes on a case of Nephrolithotomy.

GLASGOW MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on March 18th, Dr. D. Newman, the President, being in the chair.—Professor McCall Anderson showed three cases of Lupus which had been treated for long periods with the x rays with no improvement. Professor Anderson proposed to treat the cases with tuberculin and he intended to show them to the society after undergoing a course of that treatment.—Dr. W. S. Syme made a brief communication on Chloride of Ethyl as a General Anæsthetic for short operations on the throat and nose. He demonstrated a simple inhaler and with this inhaler the results compared favourably with those obtained with more elaborate inhalers. He claimed for ethyl chloride the following advantages. With a single administration, the dose varying according to the age of the patient and the time required, a period of anæsthesia up to two and a half minutes might be confidently expected. There was a minimum of struggling, so that, as in some of his cases, the assistance of a nurse was sufficient. The patient quickly recovered and the after-effects were slight. If vomiting did occur it was of short duration. Chloride of ethyl came next to nitrous oxide in safety. The dose he recommended was from three to eight cubic centimetres though more might be given if necessary.—Dr. G. H. Edington showed: (1) A specimen of Undescended Testicle, showing Tubercles in the Processus Vaginalis; (2) a specimen of Testicle fully descended strangulated by torsion of the pedicle; and (3) Solitary Kidney with Dilated Ureter associated with Malformation of Generative Organs, Ribs, &c., from a case of Atresia Ani.—Dr. J. Hinshelwood reported a case of Congenital Word-blindness.

GLASGOW OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—A meeting of this society was held on March 23rd, Dr. J. Nigel Stark, the President, being in the chair.—Dr. J. M. Munro Kerr showed: (1) A Myomatous Uterus with a large Multilocular Ovarian Cyst; (2) an Ovarian Cyst with the pedicle twisted three times; (3) Pyosalpinx; and (4) a Pregnancy situated either in the interstitial portion of the tube or in one half of a double uterus.—Dr. E. M. Pace showed a Fibroid Tumour of the Uterus undergoing Myxomatous Degeneration. There was also myxomatous tissue in the broad ligaments.—Dr. R. Jardine showed a Curette for the Treatment of Abortions. The edge was sharper than that of the ordinary dull curette.—Dr. Jardine also read notes of a case of Ulcer of the Stomach after removal of a large ovarian cyst. The cyst was complicated by the presence of a fibroid tumour of the uterus, which, however, was not removed on account of the debilitated condition of the patient. On the second day after operation the patient collapsed. The motions after this were dark, like altered blood. On the twelfth day collapse again occurred, followed by coffee-ground vomiting. The patient ultimately made a good recovery.—Dr. Carstairs C. Douglas said that in some such cases where death took place no gastric ulcer was found on post-mortem examination and suggested that this was a case of post-operative hæmatemesis.—Dr. Jardine replied that post-operative hæmatemesis occurred within a few days of operation, whereas in his case the second attack of collapse set in on the twelfth day.—Dr. W. L. Reid gave an estimate of the Relative Merits of Ventrofixation and certain other Operations for the Relief of Uterine Prolapse and Retroflexion. Dr. Reid said that if a prolapse or retroflexion, in which latter term he included retroversion, was capable of being so modified as effectually to relieve the patient by the use of a pessary he usually contented himself with recommending it, more especially as a permanent cure often resulted. Where pessaries failed and where there were no adhesions shortening of the round ligaments frequently did well. He had largely given up this operation, partly on account of the difficulty of performing it, partly because of the danger of hernia, and partly because of the appreciation of other operations. The next method he favoured, for prolapse only, was anterior and posterior colporrhaphy. To be trustworthy this had to be done thoroughly. If the uterus was heavy it was well also to amputate the cervix. Later, in young women likely to bear children he had begun to perform hysteropexy.

ROYAL ACADEMY OF MEDICINE IN IRELAND: SECTION OF PATHOLOGY.—A meeting of this section was held on March 18th, Dr. H. C. Earl, the President, being in the chair.—Mr. E. H. Taylor and Dr. O'Sullivan exhibited a Tumour from the leg of a man, aged 42 years, which had originated a year previously in a mole. The tumour, which was attached by a pedicle, was pigmented and had grown very rapidly. The glands in the inguinal region and in the iliac fossa were large and hard. Dr. O'Sullivan demonstrated microscopic preparations from various portions of the tumour. It showed near the periphery spaces lined by a single layer of high cubical cells separated from blood-vessels by hyaline connective tissue. In a deeper portion the cells, several layers deep, had encroached in this connective tissue and formed a sort of outside sheath to the vessels. The main part of the growth consisted of solid columns of cells separated from one another by a fine fibrous stroma. These cells showed very numerous mitoses. The pigment was confined to the stroma. Dr. O'Sullivan considered the tumour to be an endothelioma growing from the lymph spaces in the subcutaneous tissue.—The President discussed the paper.—Mr. L. G. Gunn showed two Tumours from Kidneys of Different Subjects. One which he called a sarcoma showed large round cells invading the kidney substance. He discussed the possibility of the tumour being a carcinoma of the suprarenal capsule. The second tumour showed a firm cystic structure with a papillary growth extending into, and dilating, the ureter.—The President and Dr. O'Sullivan spoke.

NEWPORT (MON.) MEDICAL SOCIETY.—A meeting of this society was held at the Newport and County Hospital on March 30th, Dr. J. Howard-Jones, the President, being in the chair.—Dr. R. J. Paton showed a specimen of Encysted Hæmatocele of the Cord.—Mr. J. McGinn read a paper on the Value of Venesection in Over-distension of the Right Side of the Heart and quoted his own favourable experience of the treatment.—Dr. J. Batten Coumbe read a very able and interesting paper on the Nature and Action of Toxins and Antitoxins.—The specimen and papers were fully discussed by the members present.—Mr. W. Bassett drew attention to the recent circular of the Medical Defence Union with regard to the proposed medical defence branch of the British Medical Association and it was decided to hold a meeting in April to discuss the subject.

BRENTWOOD CONVALESCENT HOME FOR CHILDREN.—On Thursday afternoon, April 14th, the new building of this institution will be opened by Lady Rayleigh. A short opening service by the Bishop of Colchester will be held previously.

Reviews and Notices of Books.

Vaginal Tumours, with Special Reference to Cancer and Sarcoma. By W. ROGER WILLIAMS, F.R.C.S. Eng. London: John Bale, Sons, and Danielsson, Limited. 1904. Pp. 92. Price 5*s.* 6*d.* net.

THE subject of vaginal tumours has hitherto not received much attention from English writers and this valuable monograph by Mr. Roger Williams is an attempt to collect and to coördinate the details with regard to these tumours which exist scattered throughout medical literature. The book includes a consideration of all the different forms of vaginal tumours, special reference being paid to cancer and sarcoma. The author agrees with Nagel's views as to the development of the vagina from the Müllerian ducts and does not accept Berry Hart's theory of the part played by the so-called Wolffian bulbs. He is also inclined to agree with the theory of Davidsohn that the small cysts lined with cylindrical epithelium found in the upper part of the vagina are aberrant offsets of the cervical glands. It is curious to note that in spite of its rarity cancer of the vagina is the commonest of the primary vaginal neoplasms, although its frequency of occurrence amounts only to about 0·43 per cent. of all carcinomata in women—a rate of frequency which is a most powerful argument against the view that irritation plays any part in the production of such growths, for few parts of the body are so liable to irritation as the vagina. The posterior vaginal wall is by far the most frequent seat of growth, 50 of the 76 cases tabulated by Bernard arising in this position. The disease is of the most fatal character, for of 16 cases operated upon in Olshausen's clinic in no less than 15 the disease soon recurred. The infantile type of sarcomata are considered to arise from developmental irregularities occurring more especially in connexion with the development of the cloaca. The great majority of these tumours are found in infants, no less than 17 out of the 25 collected by Gatti being of this variety. Details are given of a number of cases illustrating the main features of these interesting growths. In a short description of "vaginal polypoid formations in infants" attention is called to the fact that these tumours are often erroneously referred to as examples of congenital vaginal myomata. Primary melano-sarcoma of the vagina is of the utmost rarity but two cases recorded by Horn and Parona are related by Mr. Williams.

In considering the important question of the occurrence of deciduoma malignum in the vagina the author gives it as his opinion that instances of this disease occurring independently of pregnancy have not been substantiated and he sees no reason for resorting to such a far-fetched hypothesis as that of "fœtus in fœtu" to account for these tumours.

There seems little reason to doubt that the great majority of so-called fibroid tumours of the vagina are really myomatous in origin. This was probably so in no less than 19 out of the 29 recent cases tabulated by Phillips. The section devoted to cysts of the vagina is of particular interest and the author recognises no less than seven different modes of origin for these tumours—viz., from the Wolffian or Müllerian ducts, cysts derived from "rests" of the mucosa of the uterine cervix, cysts derived from "rests" of the vulvar mucosa, dermoid cysts, endothelial cysts, and parasitic cysts. There can be no longer any doubt that cysts arise from "rests" of both the Wolffian duct and the Wolffian body. The cases recorded by Routh, Skene, Milton, Rieder, and others prove this. Freund was the first to suggest that certain cysts of the vagina arose from the "rests" of the Müllerian ducts and he has recorded tumours of this kind occurring in the vaginal portion of the cervix and the upper part of the vagina. The "glandulæ aberrantes cervicales" described by Davidsohn no doubt represent the so-called vaginal glands of Huguier, Hennig, and others. Vaginal cysts, apparently arising from these glandular structures, have been described both by Davidsohn himself and by Poupinel. Vaginal cysts in the neighbourhood of the vulva undoubtedly take origin, in some instances, from "rests" of the vulvar mucosa. Although so little has been written on this variety of vaginal tumour, yet, as the author shows, dermoid cysts of at least three kinds occur in the vagina—viz., implantation dermoids, true dermoids, and dermoids derived from "rests" of the vaginal epithelium. A short final section is devoted to the interesting question of hymeneal cysts.

The extracts we have given show with what thoroughness Mr. Williams has discussed his subject. This little work is full of facts and information and should prove of the utmost value to the gynæcologist and to the general practitioner.

La Peste: Étude Critique des Moyens Prophylactiquet Actuels. (The Plague: Critical Study of the Present Prophylactic Measures.) By Dr. J. Th. DUPUY. Paris: F. R. de Rudeval. 1904. Pp. 158. Price 2 francs.

La Fièvre Jaune. (Yellow Fever.) By Dr. J. Th. DUPUY. Paris: F. R. de Rudeval. 1904. Pp. 85. Price 2 francs.

IN his work on plague Dr. Dupuy gives us a critical study of the methods of prevention that may be carried out not only in the port of arrival but also in the interior of the country affected. The author anchored in the harbour of Monte Video with a clean bill of health in April, 1902, when news came that Buenos Ayres, the port to which his ship was bound, was affected with plague. After eight days the vessel left Monte Video for France, her sanitary state having been certified to be excellent, and in three weeks she arrived at Marseilles. During the subsequent disembarkation no dead rats were found. A week after her arrival, however, a mortality amongst these animals set in, when the ship was disinfected with sulphur. About a week afterwards two of the crew were seized with the disease, one of whom died. The ship was ordered to the lazaretto at Frioul. Such was the history of the onset of the affection. Dr. Dupuy then details the measures that were taken during the quarantine of the vessel as regards disinfection. All communication with the shore having been stopped, the ports were closed and fumigation with sulphur was carried out, after which they were opened and free perflation of air was allowed. Any dead rats found were collected and burnt. A general disinfection of the crew was effected and all who desired it were inoculated with prophylactic serum, a dose of six cubic centimetres being given, the men who had come into contact with the rats being especially urged to undergo the inoculation. At the lazaretto there were two other steamboats affected. Inoculation of their crews was also resorted to; no untoward result followed beyond an eruption like that of scarlet fever or an erythema around the point of injection in three or four of the men. The vessel was then attended to, the mattresses and linen being subjected to hot air; the ports were then closed and the holds and passages were fumigated also with hot air for several hours, whilst the sails, forecastle, and various parts of the ship were washed with sublimate. Sulphate of copper, 5 per cent., was placed in the bilge. Next, in the proportion of 50 grammes for each cubic metre, sulphur was placed in receptacles and lighted with alcohol, all doors and other apertures being closed for 36 hours. The bakery and slaughter-house were washed with sublimate, 1 in 1000. Finally, after a second disinfection of the holds with sulphur and a washing with sublimate from the hose, the ports were opened. Thus, to sum up, all the parts of the vessel below the water line were fumigated with sulphur dioxide and then washed with a

solution of 1 in 1000 sublimate; all above the water-line were treated twice with the sublimate. The engine room was washed with 5 per cent. cresyl. 27 rats were found asphyxiated by the sulphur dioxide and were burnt.

Observations on 170 individuals who were injected with the prophylactic serum of Yersin, the dose being six grammes, showed not the slightest bad effect. The strictest antiseptic measures were taken. No cutaneous eruption or fever appeared; the only thing observed was slight nervous apprehension amongst a few.

The latter part of the work contains some remarks on the results of protective inoculation in 44 individuals. Here also no untoward effect followed. Four showed localised œdema in different places, whilst one had a generalised urticaria, but whether this latter was due to the injection or to his having previously eaten largely of fish, "bouilla baisse," could not be determined. In his survey of the operations Dr. Dupuy states that the principal conclusion at which he arrives is that they will always take an "enormous" time. He remarks that the length of quarantine imposed on any vessel is six days, whereas his operations of disinfection took 12 days, although the attending circumstances as regards the *personnel* for the carrying out of the necessary measures were remarkably favourable. Had they not been so the time necessary for their completion, he considers, would have been doubled. Of the means of disinfection he thinks that by sulphur to be the best and the most suitable. He comes to the conclusion that the contagion of plague is as a rule feeble and that we are better armed against it than against the majority of our great endemics. This, however, from the experience in India, would not seem to be in every case the fact.

In the second volume under review, Dr. Dupuy details the interesting results of his personal observations on yellow fever. In August, 1899, he reached the roadstead of Dakar and found a notification there to the effect that yellow fever had occurred in Rio Janeiro, where it had raged with great severity from April to the commencement of July, Bahia being also affected, these two ports being most frequented by the French marine. A series of cases that subsequently came under his care is related, with remarks as to diagnosis. Dr. Dupuy advocates the installation of a laboratory on board the vessels trading in the yellow fever zone whereby an early diagnosis of the disease could be made and the only logical method of treatment—that by serum therapeusis—could be carried out. The treatment of his cases consisted in regularly bathing the patients, in giving them an efficient purgative at the onset, and in administering antiseptic medication to the intestinal canal by salol or benzo-naphthol. The work also contains several instructive clinical histories of cases.

The Roentgen Rays in Therapeutics and Diagnosis. By WILLIAM ALLEN PUSEY, M.D., and EUGENE WILSON CALDWELL, B.S. Demy 8vo, pp. 591, and 176 illustrations. London, Philadelphia, and New York: W. B. Saunders and Co. 1903. Price 21*s.*

THIS book is one which is indispensable to the x-ray worker. The first part of 215 pages deals with the apparatus and with the uses of the x rays for purposes of diagnosis and is written by Mr. Caldwell whose name is well known as the inventor of a very useful form of electrolytic interrupter. The second part is by Dr. W. A. Pusey, professor of dermatology in the University of Illinois, and deals with the therapeutic applications of the x rays. The book is rendered additionally valuable because it supplies summaries of the experiences of other writers and because of the copious references which are given to their writings on the subject of x-ray therapeutics.

The future of x-ray work is largely bound up with the development of apparatus for direct use with the current of the street mains. When things can be so arranged that the practitioner may at once procure the illumination of a fluorescent screen by the turning of a switch the examinations of patients with the x rays will at once acquire a much more extended sphere of usefulness. Development along these lines is now progressing rapidly. Upon direct current circuits a simple arrangement of coil and turbine interrupter in a cabinet or hanging cupboard provides an outfit which can be worked with the minimum of attention and does away with most of the troublesome details of x-ray management. Almost equally good results can now be had upon alternating current circuits by means of a synchronous interrupter of the types designed by Dr. Batten and by Messrs. Siemens or by the use of an electrolytic rectifier with aluminium poles or by the new transformer of Koch. These instruments are worthy of more attention than they receive in the volume under review. For alternating circuits Mr. Caldwell advises the Gaiffe Galliot form of Wehnelt interrupter but this, in common with other forms of electrolytic interrupter, labours under the disadvantages of being noisy in action, of throwing a severe strain upon the tubes employed, and of being hardly suitable for prolonged use, such as may be needed in hospital practice, when the gradual heating of the fluid in the interrupter vessel becomes serious. We are still in need of an interrupter which will operate satisfactorily for two or three hours at a time. The difficulty, it is true, may be partly overcome by the use of very large tanks of liquid. Capacities of five or six gallons have been found necessary by some operators in this country when working with electrolytic interrupters to delay this overheating effect. The use of the fluorescent screen for stereoscopic work is also described rather too briefly. This method of x-ray examination is still in its infancy but is likely to develop in time.

In the second part the question of the therapeutic application of the x rays is ably handled in 17 chapters and of these five are devoted to the subject of malignant disease. Upon this important section of x-ray work a vast amount of interest is now concentrated. It appears certain that some real successes have already been obtained in the treatment of carcinoma and of sarcoma and the next few years will probably determine the value and the limitations of the benefit to be obtained from this method of treatment. Rodent ulcer may be considered to be curable by x-ray treatment whenever its situation is such as to permit of the exposure of the diseased part to the rays. Details of the x-ray treatment of lupus and other forms of tuberculous disease and of various chronic skin affections are also considered and are dealt with in an impartial manner which will commend itself to the reader.

Phototherapie et Photobiologie. (Therapeutics and Biology of Light.) By Dr. E. LEREDDE and Dr. L. PAUTRIER. With 17 figures. Paris: C. Naud. 1903. Demy 8vo, pp. 267. Price 4 francs.

Professor Finsen in a preface to this book writes that the reader will find in its pages the best account of the subject and he draws special attention to its last chapter which, he says, provides a necessary counterpoise to the exaggerations and fantastic applications to which, to his great regret, photo-therapy has given rise. The chapter in question deals with the electric-light bath as a mode of general treatment, complains of the charlatanism which surrounds it, and points out that, although in a general way its action may be useful as a Turkish bath method, before any further utility can be conceded to it there is need for much patient laboratory work. This so-called phototherapy is now very much in evidence in this country mainly through the medium of advertisements and is a popular quack remedy for almost everything.

The volume under review is a scientific study of the

biological effects of light and as such is a valuable contribution to the literature of the subject. The various lamp instruments used in phototherapy proper are described and figured. The iron electrode arc lamps of Bang and of Broca and Chatin are considered but no description is given of the condenser lamp with iron electrodes which is known in this country as the St. Bartholomew's lamp or Leslie Miller lamp. This instrument emits a light which is remarkably rich in violet and ultra-violet rays and is capable of giving very good results in the treatment of lupus.

Lectures on Physiology, published under the Authority of the University of London. Vol. I. Eight Lectures on the Signs of Life from their Electrical Aspect. By AUGUSTUS D. WALLER, M.D. Aberd., F.R.S. London: John Murray. 1904. Price *7s. 6d.*

"The Signs of Life from their Electrical Aspect" is in many ways a very interesting volume. Considered in the first place as a sign of educational life on the part of the University of London it forms, it may be hoped, a prelude to a great advance. A book for which its author claims with truth the nascent state of its subject matter as an advantage is truly an omen of an alteration in character in the centre of English scientific pedagogy, and the University of London has wisely accorded its imprimatur to a work in which is displayed the living nature of the teaching now to be obtained beneath its roof. From it we learn that experimental tests are evidently applied before the students to the ideas which wit and experience and the continuity of knowledge produce within the mind of an investigator of eminence and distinction, and the resultant confirmation or rejection of such ideas is obviously watched with interest by the student in a lecture room surrounded by research laboratories where patient work may drive home every point. To be shown how to confront the fancies which skirmish beyond the margin of knowledge, to criticise the tendency of the facts afterwards elicited and the manner in which they are arranged by the skilled critic and worker authorised to teach them, is indeed to draw nutriment from an *alma mater* stimulated to continuous benevolence.

Dr. Waller has been for many years consistent in his belief that the electrical states and changes, which can be measured in animal and plant tissues, are of importance. He has been singularly successful in an endeavour to rescue the instrument by which they can be recorded and most sensitively measured from the sacred precincts of the dark room and its mysteries. His methods of using the galvanometer, and his manner of explaining its use, have brought it within the reach of students hitherto dismayed by the appalling ritual demanded, so they were led to think, by its devotees. A complete justification of this welcome attitude is to be found in the many phenomena which Dr. Waller has observed in apparently simple fashion. The "blaze currents" which form the subject matter of this book, and the text of the lectures recorded in it, are by no means the least interesting examples of this. Led to their study by an investigation of the currents obtainable from the eyeball, Dr. Waller has elicited a series of facts of considerable physiological interest and of probable technical importance in the future. The facts are not deposited vaguely in the arena of scientific knowledge but are carefully defined—that is to say, the positions in which they are developed and their relation to various changes in environment have been accurately determined by ingenious experiments. It seems probable, as in all similar work, that the phenomena may not finally bear the precise significance which is here attached to them and that many of the ideas which are made to hover so gracefully around them may subsequently prove evanescent. Dr. Waller is, however, himself quite clear upon this point, and part of the excellence of the work is that a clear boundary is placed between fact and fancy.

The book, in fact, like all the volumes which Dr. Waller has produced for the benefit of the student, is of great educational value and is none the less so in this case because the reader is designedly never allowed to escape from the personal magnetism of his teacher.

The Pathogenic Microbes. By M. le Dr. P. JOUSSET, Physician to the Hospital Saint-Jacques, Director of the Laboratory of Bacteriology of the Hospital Saint-Jacques. Authorised translation of HORACE P. HOLMES, M.D. Philadelphia: Bœrecke and Tafel. 1903. Pp. 192. Price $1.00.

So far as can be perceived through the somewhat turbid medium of the translation this short work of Dr. Jousset seems to be an interesting essay on the bearings of the general principles of bacteriology on clinical medicine. It appears to be modelled on the work published by Professor Bouchard in 1892 and it is implied in the preface that the present book is concerned chiefly with the discoveries of the last ten years and brings Professor Bouchard's book up to date. There is no indication that it recognises any discoveries which have not appeared in French literature. The work does not describe the pathogenic microbes, as might be suggested by the title; individual micro-organisms are only mentioned when they serve to illustrate some general principle, such as variation of virulence or latency. The author strongly and rightly insists that the microbe, though indispensable, is only one of the factors necessary to the production of a bacterial disease and draws attention to the great importance of the conditions found in the body of the host to which the microbe gains access. Unfortunately, these conditions are disguised under the expressions "morbid spontaneity" and "morbid imminence," terms which we venture to think will convey little meaning to the English reader. In the chapter on Bactericidal Sera the author propounds what we believe to be an original view as to the relation between *alexin* and *sensitising body*—viz., that the former is transformed into the latter by heating to 55° C. (p. 57). The view that the action of antitoxin (a term much disliked by the author) on toxin is not of the nature of a chemical neutralisation is strongly asserted but none of the experiments which traverse this position are even mentioned. We regret to see Haffkine's cholera "vaccine" once more spoken of as a cholera "serum." It has already been suggested that the translation is unsatisfactory. It is little more than a literal transcript and it is difficult to do justice to the matter when presented in this form. Whether a well-known organism should be spoken of as the "bacillus coli" or the "bacillum coli" appears to depend on "the taste and fancy of the speller," as both forms may be met with even on the same page.

As usual in French books there is no index. We may point out that in the few footnotes to which the initials of the translator are attached there is no evidence of the eccentricities of style which disfigure the body of the translation.

LIBRARY TABLE.

Medical Annals and Report of the Hamidié Children's Hospital for 1902. Fourth year of publication. Constantinople. 1903. Pp. 663.—This report of what is apparently a first-class hospital organised upon the most modern lines contains some very interesting matter. Although the Hamidié hospital was founded by the Sultan for women and children yet a number of wounded soldiers were treated there during the 12 months October, 1902, to October, 1903. The report is printed mainly in Turkish but there are also

articles in French, German and English, together with records from the *livre d'or* or visitors' book. Most of the English articles in the book are quite correctly printed but the following is worthy of reproduction as a fearful example of what may occur from what is said to be a common failing of the medical profession—namely, the inability to write legibly:—

> It has given me the greatest pleasure to have been turn round the hospital and I am greatly stuck with the manner in which the work is carried on, and also with all the haket objects and instruments that are used.
>
> —, M.B.E.N.,
> Blackbeen,
> Lancardiv, England.

We have omitted the practitioner's name, but we have left in the letters which we presume refer to a qualification. Among the preliminary articles is one by M. Bareilles, the secretary and librarian of the hospital, upon medical science among the followers of Islam. This is an interesting historical retrospect of "Arab" medicine. We learn from M. Bareilles that the treatment of fractures by immobilisation was in vogue in Constantinople towards the end of the 17th century. Fractures were then put up in plaster-of-Paris splints and if the fracture was compound the splint had windows cut in it. This we fancy was long before the introduction of the plaster splint into Western Europe.

The Book of Herbs. By Lady ROSALIND NORTHCOTE. London: John Lane. 1903. Pp. 212. Price 2*s.* 6*d.* net.—Lady Rosalind Northcote has collected in her little book a vast amount of information about herbs. She confesses that her definition of what constitutes a herb is somewhat indefinite and we see that she includes such plants as cardoons, rhubarb, samphire, skirrets, and chives. However, anybody who has a garden will do well to get this book and to grow herbs according to the directions given therein. The latter portion of the volume is taken up with an account of the uses of herbs in medicine and in magic, and with sundry details of the folk lore of herbs. With all the absurdities with which the use of herbs and other plants in medicine was overlaid there was often a substratum of truth. For instance, not so very long ago it was the custom in the West of England to rub the inside of a churn with nettles to keep it sweet, and cream cheeses were laid upon nettles to prevent them going mouldy. Nowadays the very latest disinfectant and antiseptic is formaldehyde and yet it has always existed in nettles together with formic acid.

Charles White, F.R.S.: a Great Provincial Surgeon and Obstetrician of the Eighteenth Century. By CHARLES J. CULLINGWORTH, M.D. London: Henry J. Glaisher. 1904. Pp. 56. Price 2*s.* 6*d.*—Biographies of medical worthies who have played important parts seldom fail to be interesting and these conditions are fully realised in the present volume which is a publication in book form of an address delivered by Dr. Cullingworth before the Medical Society of Manchester on Oct. 7th, 1903. A lengthy abstract of the address appeared in THE LANCET of Oct. 17th, p. 1071. Charles White was one of the founders of the Manchester Royal Infirmary, the origin of which dates from 1752, and he was an active member of the staff until 1790. The illustrations comprise a portrait of Charles White, a view of his house in King-street, and two views of the Infirmary. It would, perhaps, have been better if the names of these views had appeared on some part of the plate itself instead of on a separate and unpaged leaf.

Traité de Radiologie Médicale. Published under the direction of CH. BOUCHARD, Professor of General Pathology to the Faculty of Medicine, by MM. BÉCLÈRE, BERGONIÉ, BERTIN-SANS, BORDIER, BOUCHACOURT, ANDRÉ BROCA, CLUZET, FABRE, GUILLOZ, IMBERT, LEDUC, LE NOIR, MARIE, MIGNON, MAUNOURY, OUDIN, RIBAUT, RUAULT, SAGNAC, SCHEIER, VILLARD, and WEISS. With 357 figures and seven plates. Paris: G. Steinheil. 1904. Crown quarto, pp. 1100. Price 30 francs.—This important work covers the whole ground of radiography and its applications to medicine and surgery. It is edited by Professor Bouchard with the collaboration of a large number of distinguished writers. The consideration of the Crookes tube and of the various electrical generators employed for the production of the x rays, together with a study of the physics of the x rays, occupies the first part of the volume. The second part deals mainly with radiography in all its medical applications. Every detail of technique for the operations of x-ray work for purposes of diagnosis finds its proper place in these pages. X-ray therapeutics are somewhat meagrely dealt with in the concluding chapter and the dangers and accidents of x-ray work are considered at somewhat greater length in the preceding one. As a work of reference this volume is very valuable and its magnitude serves to illustrate the enormous developments of x-ray work up to the present time.

Cours de Dermatologie Exotique. (*A Course of Lectures on Tropical Diseases of the Skin.*) Par E. JEANSELME, Professeur agrégé à la Faculté de Médecine de Paris, Médecin des Hôpitaux; recueilli et rédigé par M. TRÉMOILIÈRES, Interne des Hôpitaux. Avec 5 cartes et 108 figures dans le texte en noir et en couleurs. Paris: Masson et Cie. 1904. Pp. 403. Price 10 francs.—Professor Jeanselme was appointed to lecture at the Institut de Médecine Coloniale de Paris on the diseases of the skin peculiar to, or especially prevalent in, the tropical regions and in performance of that duty he delivered the lectures which were reported by M. Trémoilières. We consider that the author has done well to publish these lectures, for they deal with a branch of dermatology not sufficiently studied until very recently. In this country the two schools of tropical medicine are doing much to remove from us the reproach of neglecting the diseases of warm climates though so many parts of the British Empire lie between the tropics. The diseases dealt with in this volume comprise leprosy, syphilis, yaws, and verruga Peruana; the Oriental sores, various hyphomycetic conditions such as tinea imbricata, elephantiasis Arabum and other conditions connected with animal parasites, and a few other diseases which are difficult to classify as we know but little of their mode of origin. The style in which the book is written is fluent and pleasant to read and this work should prove an interesting introduction to tropical dermatology for any medical man proceeding to a warm climate. It is excellently illustrated.

Nurse Charlotte. By L. T. MEADE. London: John Long. 1904. Pp. 319.—Like many of Mrs. L. T. Meade's writings, this book will serve to amuse medical readers without affording instruction beyond the indication of the many pitfalls besetting the path of those who deal with medical matters with insufficient equipment. On the eighth page a young lady announces her intention of getting "a post at St. Thomas'" through the influence of a country practitioner. She succeeds, but we find her installed at St. Christopher's where medical and surgical cases are strangely mixed up, where the leading physician is obviously engaged in general practice and has long had his eye on the country practitioner "as a possible partner" for himself. The description of the inner life of the nursing staff is nearer the truth than was the pitiful caricature of hospital nursing once depicted by Mr. Hall Caine, but that is all the commendation which we can give honestly. We doubt also if any nurses genuinely engaged in nursing will find the story wholly flattering to the system or to the individuals concerned, although the heroine is meant to be an angel of light.

JOURNALS AND MAGAZINES.

The Journal of Physiology. Edited by Sir MICHAEL FOSTER, K.C.B., F.R.S., and J. N. LANGLEY, F.R.S. Vol. XXX., Nos. 5 and 6. London: C. J. Clay and Sons, Feb. 25th, 1904. Price 8*s.*—The contents of this issue

are as follows: 1. J. A. Macwilliam, M.D., Professor of Physiology, with A. H. Mackie, M.D., and Charles Murray, M.D., Assistants in Physiology in the University of Aberdeen, on the Intravascular Injection of Salts and of Nucleo-proteid, with 14 figures in the text. Tracings are given showing the effect of the intravascular injection of various sodium salts on the respiration. The exophthalmos which has long been known to follow the injection of nucleo-proteid obtained from the thymus or from lymph glands is shown in this article to be due to blood clots at the back of the orbits. 2. Otto May, M.D., on the Relationship of Blood-supply to Secretion with especial Reference to the Pancreas, with nine figures in the text. Dr. May finds that there is no direct relationship between the rate of secretion of pancreatic juice and the amount of its blood supply. Secretion continues for some time after complete cessation of the pancreatic secretion. He also finds that the pancreas is well supplied with vaso-constrictor nerves which in the cat proceed from the solar plexus in the bundle of post-ganglionic fibres accompanying the coeliac axis artery. 3. W. M. Fletcher, the Osmotic Properties of Muscle and their Modifications in Fatigue and Rigor, with 11 figures in the text. 4. J. N. Langley, F.R.S., and H. K. Anderson, on the Union of the Fifth Cervical Nerve with the Superior Cervical Ganglion. The experiments of the authors of this article lead them to conclude that certain somatic fibres are capable in favourable circumstances of making functional connexion with sympathetic nerve-cells. 5. Keith Lucas, on the Influence of Tension upon the Contraction of Skeletal Muscle at High Temperatures, with five figures in the text. 6. E. G. Wilcock, the Action of the Rays from Radium upon some Simple Forms of Animal Life. 7. Major R. H. Elliot, M.B., and E. Burnett, B.A., a Modification of Professor Schäfer's Frog-heart Plethysmograph, with some observations on the mode of using it, with one figure in the text. 8. R. Row, M.D., on Some Effects of the Constituents of Ringer's Circulating Fluid on the Plain Muscle of Rana Tigrina, with 15 figures in the text. 9. T. G. Brodie, M.D., and W. E. Dixon, M.D., Contributions to the Physiology of the Lungs, with 10 figures in the text. This article is occupied with the consideration of the vaso motor nerves of the lung. The authors give the results of their experiments with various drugs on the rate of flow of blood through the pulmonary vessels. They find the pulmonary arterioles have no vaso-motor nerve supply. 10. W. B. Warrington, M.D., Note on the Ultimate Fate of Ventral Cornual Cells after Section of a number of Posterior Roots. This issue of the journal contains the Proceedings of the Physiological Society on Dec. 12th, 1903, and Jan. 23rd, 1904.

The Journal of Hygiene. Vol. IV., No. 1. January, 1904 London: C. J. Clay and Sons. Price 7*s.* net.—This number opens with a joint paper on the Chemical Constitution of the Tubercle Bacillus by Dr. William Bulloch and Dr. J. J. R. Macleod, who arrive at the conclusion that the acid- and alcohol-fastness of the tubercle bacillus is due to the presence of an alcohol. Dr. Alexander Edington makes some further remarks on the production of a malarial form of South African horse-sickness, and Dr. E. F. Bashford treats of some fundamental experiments in immunity in a paper which is accompanied by some very instructive plates. Dr. A. E. Boycott and Dr. J. S. Haldane contribute their second paper on Ankylostomiasis in which they discuss the methods of diffusion and the means of diagnosis and treatment of the disease. In the last article Dr. Herbert E. Durham passes in review the several theories which have been held responsible for beri-beri and he arrives at the conclusion that "the appearances and disappearances of beri-beri and the more or less seasonal waves of the disease are not unlike those which are seen in the case of the infective diseases which are met with in this country." Dr. Durham, in fact, thinks that beri-beri may prove to be a communicable disease and that it has to be considered rather in the light of what he calls a "gang" or "institutional" disease than as a "place" or "house" disease.

New Inventions.

INSTRUMENT FOR THE REMOVAL OF FOREIGN BODIES FROM THE NOSE.

THE accompanying illustration represents a little instrument which I have designed for the removal of foreign bodies from the nose. The ordinary methods of removal are not always satisfactory and it was after meeting with a difficult case in which an indiarubber teat had been introduced into one of the cavities that I sought for some

new instrument likely to prove valuable in such circumstances. As will be seen, the end of the instrument is flattened and turned down, this portion being six millimetres in depth and being provided with three small teeth. It can be readily passed into the nose beyond the object to be withdrawn and gentle traction will lead to rapid removal of the foreign body without laceration of the surrounding parts. Rhinoliths may, no doubt, be dealt with in the same way. Messrs. Mayer and Meltzer, of 71, Great Portland-street, London, W., made the instrument for me.

ARTHUR ROBERTS, F.R.C.S. Edin.,
Surgeon to the Ear, Throat, and Nose Department, Royal Berkshire Hospital.
Reading.

NOTE ON A SIMPLE STERILISABLE BAG FOR CLOSED ETHER INHALERS.

THE indiarubber bags for Clover's and other ether inhalers are liable to perish unless often used and kept in a warm place, besides not always being easily replaced. Moreover, they will not usually stand repeated or prolonged boiling. I should like to describe a simple home-made article made from jaconet, or still better, from a new waterproof material which can be boiled called "mosetig battist." This is sold in widths of 36 inches and one yard is enough to make four Clover's bags. There are other materials of like make sold—e.g., one called "billroth." The directions for making the bag are as follows. A yard of battist is taken and doubled so that the shiny surface is inside, then the pattern is laid on the battist (using no pins), the bag is cut out, then stitched round its edge, leaving a margin of from one-eighth to one-quarter of an inch, and, still keeping the shiny surfaces together, is turned inside out and stitched round again, making a flat seam. Then the bag is inverted and is ready for use. The shiny surfaces seem to adhere along the seam. Bags so made are airtight and watertight and can be used just like rubber ones, than which they are very much cheaper. The neck, of course, should be made wider than that of a Clover's bag as it will not stretch. A rubber band or piece of string is used to fix the neck to the angle piece of the inhaler. These bags, then, are quickly and easily made at home, are very cheap, will stand sterilising by boiling, and are very lasting.

W. J. MCCARDIE.
Birmingham.

THE LANCET.

LONDON: SATURDAY, APRIL 9, 1904.

The Education Act and Physical Fitness.

THERE are indications that in a physical sense the people of this country are passing through a critical stage. We do not go so far as to suggest that upon the nature of the steps which are taken now to improve the condition of the individual, and thereby of the mass, may depend the future survival of the nation as a leading commercial and fighting entity. We know that much of the talk about national physical deterioration is only talk, but none the less there is an uncomfortable substratum of truth at the bottom of this talk. The position is a serious one and it behoves every Englishman worthy of the name to do his part in bringing about a better condition of affairs. It is impossible at present to demonstrate by statistics which shall be beyond criticism the alleged physical deterioration of the people. As yet no serious study of anthropometrics has been undertaken and there are consequently no data available which will allow us to compare the physical condition of our predecessors with that of the present generation. Doubtless the necessity for the compilation of accurate data in the above sense will form one of the recommendations of the Select Committee on Physical Deterioration which is now sitting. The fact that the death-rate is diminishing and that the average duration of life is increasing cannot be regarded as negativing a view that the physical condition of the people is deteriorating. By tending plants in greenhouses during the winter months we can reduce their death-rate almost to *nil* but it would be altogether erroneous from this to assume that the plants were more hardy. That the physical condition or fitness of those who spend their lives under rural conditions is *ceteris paribus* better than that of those who pass their lives in the din and dirt of our large cities must, it seems to us, be accepted as a fact, and if this be conceded the rapidly increasing tendency to forsake the country for the town must be making for deterioration rather than for improvement. Sedentary lives, overwork, smoke, noise, and absence of fresh air and light are all forces which on general biological lines are likely to lead to diminished vitality and the problem of the future is how best to counteract these detrimental agencies.

In our view a powerful instrument in this direction is at hand in the new Education Act. The education of the children of this country has until quite recently been in the hands of authorities who have had no interest in, and no concern with, the public health and who were not elected to safeguard the health of the nation. This state of affairs still obtains in the metropolis. But after May 1st the education of the whole country will in large measure be entrusted to authorities who have for many years been concerned, at least in some degree, with the public health and who will now have to deal, in addition, with public education. It is the primary duty of the education authority to teach the children something by which they may obtain the means to live; it is one of the duties of the sanitary authorities, although they have largely neglected it in the past, to teach the people *how* to live. It is therefore reasonable to hope that the sanitary authorities will not, in discharging their educational functions, lose sight of the functions for which they were established. There is now before the county boroughs, and to some extent before the district councils of this country, an opportunity for work in a national and imperial sense which has never before been equalled in their histories. They have now an opportunity of eclipsing in a public health sense all previous records. It is to be hoped, therefore, that the new education authorities will have brought home to them the urgent necessity for detailed attention to the physical welfare of the children. We should like to see their attention called to the subject by the central health authority, the Local Government Board, a department which might very well take upon itself a little initiation in this all-important matter. The expiring London School Board has done a good work in investigating into, and caring for, the health of its charges, as anyone who has read Dr. J. KERR'S first and last report will appreciate; but it is disappointing to find that as regards any scientific investigation into the ventilation, heating, and lighting of the schools very little has been attempted and it seems to us that in the past far too much attention relatively has been devoted to infectious diseases alone. The mortality from, and sequelæ of, infectious diseases form but a small factor in the national health. The first step should, in our opinion, consist in the appointment of medical officers who should, so far as is possible, be in possession of special experience. In some cases use might be made of the medical officer of health and by combining this appointment with his other duties it would be possible to appoint whole-time officers to a greater extent than is the case at present. Before any child is allowed to attend school such child should be provided with a medical certificate, given after careful examination, testifying to his or her mental and physical fitness to undertake the work, and there would, we think, be no objection to the postponement of the commencement of education to a somewhat later age than at present. With this certificate should be furnished particulars as to the weight, height, and age of the child and the condition of his or her special senses. Such information should be brought up to date at least once annually, when the teeth and the special senses should be re-examined. When such data have been collected for some years we shall no longer find as we find in Dr. KERR'S annual report a statement of regret that "we have no trustworthy measurements of the development of London children."

But in addition to this record of the physical progress of the children it is essential that the rudiments of healthy existence shall be impressed upon them. The value of cleanliness, of fresh air, and of light in the prevention and reduction of disease should be taught by the

aid of simple diagrams and illustrations and the children should be made to feel the effects of physical fitness by carefully arranged exercises carried out in the open air. In a word, the rising generation should be taught the vast importance of vigorous health in the struggle of life and the best means by which it may be attained and kept. The children should have the love of fresh air, cleanliness, and light so ingrained into them that when they grow up they will refuse to inhabit the slums and will bestow administrative power not upon the jerry builder but upon the representative who will do most for the health of the people. In the girls' schools, too, the elements of cooking should be taught and the older children should learn from experienced teachers how to purchase food which will provide the highest nutritive value for any given outlay. It is in ways such as these that we shall gradually develop a health conscience which will react upon the physical condition of the future generation. The Local Government Board should call the attention of all medical officers of health to the desirability of dealing with this subject of physical education in their annual reports and copies of such reports should be sent to the members of the local educational committees. The Local Government Board owes, we think, this initiative step to the nation and it may well be asked:—If the physical condition of the people does not concern that department upon which department does the duty devolve? We are glad to see that in some instances medical officers have already been appointed and that in other cases, of which Richmond in Surrey is an example, such an appointment has been recommended by the medical officer of health.

The Cumulative Action of Drugs.

IN several recent prosecutions for the sale of impure drugs it has been interesting to note that in the course of the evidence reference has been made to the evil "cumulative" effect of the trace of impurity. This has been mentioned especially in connexion with cream of tartar in three samples of which lead was found in the proportion of three-quarters of a grain to the pound, while a fourth sample contained one-tenth of a grain of arsenic to the pound. Of course, these contaminations ought not to be present and in three of these cases penalties were inflicted. In the fourth case the druggist was able to show that the article was sold as received with a warranty from a wholesale house and, since it was necessary that proceedings against the warrantors should be taken within six months of the time of the giving of the warranty, both the retail druggist and the wholesale house escaped the infliction of a fine. In these cases and in many others the analyst has given evidence that in his opinion the contamination was prejudicial to the health of the consumer and the question of cumulative action has been raised to support this opinion. Without disputing the validity of this claim and without defending or excusing the presence of these impurities it may be of interest to review briefly the present state of our knowledge of the mode of action of cumulative poisons or drugs. It has long been recognised that occasionally undesired effects result from the administration of remedies which have been given in average or moderate doses and when such accidents occur it has been customary to refer them either to some special idiosyncrasy or to cumulative action. The former explanation is the easier way out of the difficulty since it assumes a peculiar individual intolerance of drugs which are generally beneficial or at least harmless in moderate doses and it thus shifts responsibility from the prescriber to the consumer who, presumably, if already aware of individual intolerance, should have given the word of warning which would have prevented a repetition of unpleasant experiences. Special idiosyncrasy can only be ascertained by experiment but there is no need to repeat the experiment if the disquieting result can be predicted with accuracy, even though the explanation of the result still evades scientific precision.

On the other hand, the possession of cumulative action appears to be a special attribute belonging to the drug rather than to the consumer. While intolerance applies to some unknown individual peculiarity for particular drugs cumulative action seems to depend upon some disproportion between the rate of absorption and the rate of elimination and it is a property which in all likelihood affects most individuals in a precisely similar fashion. Cumulative action, therefore, is to be explained from the known physiological effects of the drug and it can, within certain limits, be determined by experiment upon animals and thus guarded against in practice. The best known illustration of cumulative action is afforded by digitalis and it has been ascertained that the occasional disproportionate effect in retarding the cardiac pulsations occurs when its elimination by the kidney, that is the diuretic action, has been checked. This is not the sole explanation, however, since it would appear that in some cases active principles may pass out of the blood-vessels into effusions into serous cavities, or into subcutaneous tissues and that they may there be innocuous but again become potent after reabsorption. It is an aphorism of medicine that a drug is active so long as it is circulating in the blood. On this hypothesis the amount in circulation at any given time must depend upon the degree of solubility and upon the rate of elimination through any excretory organs. Circumstances favouring solubility must increase the rate of absorption and in this we find the explanation of the variations in the results which may ensue from the different modes of administration of sparingly soluble drugs such as sulphonal. The rate of elimination is more difficult to control and it is often more difficult to explain. It may depend upon the nature of the active principle of the drug; thus while glucosides are slowly absorbed they are much more slowly eliminated and thus they may produce an overwhelming influence after long-continued use with little apparent effect. Dr. HOBART AMORY HARE has recorded an example of cumulative action with digitalis in a case of pleuritic effusion in which the toxic influence persisted three days after the cessation of administration and he also mentions another instructive case in which the relief of ascites by tapping was followed by reabsorption of fluid from the subcutaneous tissues and by a violent explosion of digitalis poisoning.

With regard to mineral substances the term cumulative action has been less commonly employed, perhaps because the effects produced have been less violent, less obvious, and less immediately consecutive to the use of the drug. There

can be no doubt, however, that many minerals are slowly eliminated and that they are largely deposited in various tissues in which they may produce deleterious effects. The results of the continued absorption of small quantities of arsenic have been emphasised since attention was directed to the subject in connexion with the contamination of beer with this substance. Antimony, mercury, and lead also afford examples of mineral drugs which may similarly produce toxic symptoms of long duration. Some symptoms of bromism and iodism, however, probably result from direct irritation during elimination and thus do not afford examples of cumulative action.

The importance of due appreciation of the relative rates of absorption and elimination is not limited to the occasional presence of impurities from which we should be protected by examination of the drugs employed. This knowledge should also govern the dosage and administration of drugs which have the undesirable property of accumulating within the system, and it affords another opportunity of laying stress upon the risks which may arise from the possession of prescriptions given without sufficient warnings of the limits of safety or the need of caution. Prosecutions for impurities and adulterations are interesting and necessary but they would fail in their full measure of instruction if they did not serve also to direct attention to possible dangers which may arise during the injudicious use of some most trusted remedies.

Remarkable Resuscitations.

THE fear of being "buried alive" seems to be inherent in the minds of certain individuals and elaborate instructions are occasionally included in their last testaments in order to prevent a fearful calamity, the occurrence of which is not denied though its frequency has been much exaggerated by popular report. The uncertainty of the signs of death must be acknowledged but medical literature contains only one or two authenticated cases of a living person having actually been buried. The first man of science or philosopher whose opinion is available as to what constitutes a proof of death is DEMOCRITUS and he maintained that there was no certain sign of the cessation of life. CELSUS severely criticised this opinion and asserted that if the apparent identity of certain signs deceives an unskilful physician an experienced and intelligent man cannot be mistaken. ORFILA, FODÉRÉ, and MICHEL LEVY all believed in the possibility of premature burial. LANCISI and LOUIS, on the other hand, controverted such a doctrine. BROUARDEL,[1] in his interesting work "Death and Sudden Death," which has been translated into English by Dr. F. L. BENHAM, whilst admitting that premature burial cannot be absolutely denied, demonstrates that it must be extremely rare. In support of this contention he instances the mortuary chambers established in Germany and elsewhere in which dead bodies are placed, a bell rope being attached to the hand of each. He says "that from the time that mortuary chambers were instituted—and that at Weimar dates from 1792—neither at Weimar nor at Munich ..... nor anywhere else, I believe, has anybody ever rung that bell."

[1] Death and Sudden Death. Translated by F. L. Benham.

Although, then, premature burial for all practical purposes may be considered not to take place, nevertheless many instances are on record in which by skilful treatment the apparently dead have been restored to life. The majority of such cases have occurred in individuals who have been removed from the water apparently lifeless. It is difficult to fix accurately the time in which drowning proves fatal. In human beings, as a rule, asphyxia supervenes in from one minute to two minutes after submersion and death usually before the expiration of five or six minutes, but life may be considerably prolonged if from any cause water has been prevented from entering the lungs. A case was recorded in THE LANCET by Mr. CHARLES POPE[2] in 1881 in which a man was sailing in a boat when it capsized and he fell into the water with some weights on top of him, so that with the exception of his left arm he was entirely and continuously submerged for from 12 to 15 minutes. He was resuscitated with considerable difficulty and eventually recovered. The weights probably prevented water from entering the lungs. Longer periods of submersion with recovery than this, however, have been recorded. In one case submersion had lasted for 20 minutes,[3] and in another, which is, however, "doubtful," one hour is the recorded time.[4] Examples again have been recorded of resuscitation after two hours' employment of SILVESTER'S method of artificial respiration, the subjects being apparently dead.[5] On one occasion[6] a boatman towed the body of a man ashore and pronounced life to be extinct; a medical man corroborated this opinion but two more sanguine bystanders began vigorous treatment, with the result that the apparently drowned man entirely recovered from the effects of the submersion. Another class of case in which resuscitation has occurred, although the individual was apparently dead, is after hanging. HOFMANN reports such a case.[7] A criminal, who was sentenced to be hanged, had round his neck enlarged glands which partly neutralised the constriction of the encircling slip-knot. The body remained suspended for 20 minutes and death was certified to have taken place. The body was then transported in a van at a rapid pace to the post-mortem room. There was some distance to go and when the van arrived the physicians were greatly surprised to see instead of a corpse an individual who raised himself up before them and looked at them with a scared expression. Three or four hours afterwards the man died from pulmonary congestion, evidently a result of the hanging. Other criminals are believed to have been luckier, for there are stories, which seem to have their origin in fact, of the recovery and escape of men who have been judicially hanged.

It is not a matter for wonder that in cases of concussion of the brain mistakes have arisen. During the retreat from Russia General ORNANO had his head grazed by a bullet while in the act of charging the enemy; he fell from his horse and his orderly ran to his assistance but found that he showed no signs of life; he therefore buried him under a heap of snow. The orderly then went to announce the death to NAPOLEON. Two hours afterwards General ORNANO

[2] THE LANCET, Oct. 1st, 1881, p. 606.
[3] American Journal of the Medical Sciences, April 22nd, 1853, p. 348.
[4] Annales d'Hygiène, 1850-52, p. 306.
[5] Medical Press and Circular, Jan. 30th, 1867.
[6] Dixon Mann: Forensic Medicine and Toxicology, p. 242.
[7] Quoted by Brouardel, loc. cit., p. 30.

appeared and reported himself to the EMPEROR; he lived a long time afterwards and was actually one of the pall-bearers to the orderly who had buried him. The after-effects of lightning have given rise to similar error. SESTIER, in his work entitled, "De la Foudre," relates seven cases in which apparent death lasted for five or six hours. BROUARDEL records the case of a boy, aged 13 years, who fell from the sixth storey of a house on to the pavement. The boy had been taken to a druggist who had pronounced him to be dead and sent him on to a hospital where admission was refused as he was supposed to be dead. BROUARDEL, however, saw him and stated that the lad was alive, although the sounds of the heart could not be heard on auscultation. The boy received suitable treatment and recovered.

Alcohol may produce a condition of apparent death. A case is recorded of an old woman who was found in the street and in whom no sign of life was apparent. She was conveyed to the hospital and the rectal temperature was found to be 77° F. Energetic treatment was resorted to and she recovered. Prolonged narcotism brought about by other substances sometimes gives rise to natural alarm. The late Sir BENJAMIN WARD RICHARDSON[*] mentioned the case of a medical man who took 120 grains of chloral. When seen he was to all common observation dead, there was no sound of respiration, it was very difficult to detect the sounds of the heart, there was no pulse at the wrist, and the temperature was 97° F. He had been in that condition for some hours. He was revived by raising the temperature of the room to 84° F. and injecting warm milk-and-water into the stomach. He made a perfect recovery. Finally, we may refer to a class of case more or less familiar to all members of the profession—namely, apparently stillborn infants who if left simply to the care of the mother or to an ignorant midwife surely perish but if properly attended to in all probability survive. DEPAUL succeeded in restoring newly born children by means of pulmonary insufflation one and a half, two, and even three hours after the heart had ceased to beat.

The instances that we have recorded of resuscitation of the apparently dead are, of course, of extremely rare occurrence In the vast majority of instances no difficulty is experienced by a medical practitioner in determining whether or not death has taken place but occasionally cases are met with in which some doubt may exist and it is needless to add that in such circumstances no efforts to restore animation should be relaxed until it is absolutely determined that all vital processes are extinct.

Annotations.

"Ne quid nimis."

THE NOMENCLATURE OF DEATH CERTIFICATION.

The Registrar-General has just caused to be distributed copies of the new list of diseases causing death which is now in use in the General Register Office at Somerset House as well as in the similar offices of Scotland and Ireland. The list is based on the "Nomenclature of Diseases" authorised by the Royal College of Physicians of London. In the notes which accompany it a hope is expressed that in future medical practitioners will assist the work of registration and the compilation of statistics by abandoning so far as practicable sundry terms now deemed obsolete, such as "convulsions," "scrofula," and "phlegmon," which are given in the list, to say nothing of such vague words as "consumption" or "decline," which belong only to the popular terminology. Certain suggestions which give evidence of a commendable desire to establish the statistical tables upon a foundation of scientific pathology are offered, as thus: "In certifying deaths from small-pox the patient's condition with respect to vaccination should be carefully stated." Puerperal "fever" is to be described as pyæmia, septicæmia, or septic intoxication of puerperal origin. Three forms of pneumonia are recognised and are included under "general diseases." Malignant disease is to be differentiated into carcinoma or sarcoma when possible and care is to be taken to specify the particular organ or part affected. The epidemic form of cerebro-spinal meningitis is to be distinguished as cerebro-spinal fever; the exciting cause of "peritonitis" is to be mentioned and the nature of a "tumour" is to be explained. If any exception is to be taken to these and to the other propositions set forth it can only be on the ground of want of feasibility. It may not be possible always to state the cause of death with the wished-for accuracy. There is in private practice usually a difficulty in obtaining leave to make a post-mortem examination and without such examinations it is doubtful whether the objects of the new arrangement stand much chance of being realised. Nor is this the only direction in which obstacles are to be found. A covering letter to the medical officers of asylums asks that in certifying the deaths of persons of unsound mind "particulars of the definite brain disease for which the patient was under treatment in addition to any disease other than brain disease which may have been the immediate cause of death" shall be inserted in the certificate. In the present condition of cerebral pathology this is hardly practicable. Patients in asylums are rarely under treatment for "definite brain disease" in the pathological sense. The clinical aspects of their disorders form the basis of the classification of mental diseases. It is assumed with some show of reason that every mental abnormality is correlated with a structural change in the brain but the exact nature of the relation is yet obscure, for the alterations in the brain substance are not always visible and if visible may appear inconstant. Only, perhaps, in the case of general paralysis of the insane does the train of symptoms afford an index of the progression of the process of cerebral degeneration. One other point occurs to us. Alcoholism is mentioned as a cause of death but no allusion is made to it in the notes appended.

THE HOLMAN TESTIMONIAL.

FOR the last 50 years the name of Constantine Holman has been prominent in all the public work of the profession as treasurer and vice-president of the British Medical Association, vice-president of the British Medical Benevolent Fund, president of the Surrey Benevolent Medical Society, treasurer and vice-president of Epsom College (for which he has collected over £7000 by his personal efforts), and member of committee of the Royal Asylum of St. Anne's. He has rendered signal services to his profession and the cause of charity. So great have been these services that, as we have already announced, it is thought desirable by his friends and colleagues that some record of their appreciation should be established. It is proposed to devote the proceeds of this testimonial to the erection of an art and reading room at Epsom College to be called the "Holman Art and Reading Room." Subscriptions of any amount will be received by Dr. John H. Galton, Chunam, Sylvan-road, Norwood, S.E.

[*] Transactions of the Medical Society of London, 1889, vol. xii., p. 105.

treasurer. Communications should be addressed to Mr. W. A. Berridge, Oakfield, Redhill, secretary.

SANITARY WORK.

THE Lord Mayor of Manchester took the chair on March 1st at the annual meeting of the Manchester and Salford Sanitary Association. The Bishop of Manchester (Dr. Knox) and the Bishop of Ripon (Dr. Boyd Carpenter) were present. The report showed that the association was still watchful and diligent in the cause of public health. The Bishop of Manchester said that at about the beginning of last century the idea was that people would see how uncomfortable it was to live in misery and degradation and so would put out their best efforts. This theory was found wanting and the great problem was—how much they must leave to individual enterprise, what was to be the share of benevolent enterprise, and what was the exact position of the State and municipal enterprise in dealing with the evils around us. The Bishop of Ripon was glad to see that Manchester was in earnest about the public health. He advocated authorised medical inspection in schools, the distribution of information, and especially the proper feeding of children. "The committee regretted the claims of the association for increased pecuniary support were not recognised adequately." Much more good could be done with a small addition to the funds. Donations to the amount of £100 are wanted to meet existing liabilities and additional annual subscriptions to the amount of £50 are needed. Surely in a wealthy city like Manchester there should be no difficulty in raising these small sums.

GUARDIANS AND THEIR OFFICERS.

CERTAIN boards of guardians are just now considerably perturbed by what are to them uncomfortable and unexpected results of modern democratic tendencies. At the meeting of the Birkenhead guardians on March 29th a member asked whether it was true that one of the board's paid officials had nominated a gentleman as a guardian at the recent election. The question proved to have only too sure a foundation on fact, for it appears that not one officer but two officers, and those district medical officers, had acted in the way described. Thereupon the board, metaphorically speaking, demanded the heads of the guilty parties. One member was "surprised that such a thing should be brought before them in these enlightened days" and wished to fly to the Local Government Board for vengeance. Another of less truculent disposition suggested that the officers "might have signed not knowing it was wrong," which seems likely enough. A third with profound sagacity feared that the matter might lead to "possibilities of which they had not the slightest idea" but was apparently unable or unwilling to be more explicit. It was eventually decided to let the matter drop, perhaps because there was nothing else to be done, in the hope that the offenders would be deterred in future from repeating their misdeeds by reflecting on the storm which they had raised. Another aspect of the same lamentable disregard of parochial sensibilities has been visible at Lambeth. At a meeting of the board for that district a lady guardian communicated the distressing intelligence that several superannuated Poor-law officers were standing as candidates at the elections shortly to be held. She asked whether this kind of thing could not be prevented; it could, she thought, never have been contemplated that such persons should be able to get elected and she, also, wanted to appeal to the Local Government Board. The clerk to the guardians said that that august body had been appealed to but declined to offer any opinion as to the merits of the case. However ill it may consort with the traditions of a parish that servants or former servants of a board should be enabled to control in some slight degree its policy there is really no cause for alarm in the development referred to. A district medical officer is none the worse fitted for attending to his duties because he exercises his rights of citizenship and to object to the election of some particular representative on the ground that he is enjoying the annuity which, through the agency of the Superannuation Act he has purchased for himself, is so eminently illogical that it is surprising that anyone could take up such an attitude seriously. To suppose that it would be possible for a person in receipt of a superannuation allowance, if a member of a board of guardians, to abuse that position by diverting the funds of the board into his own pocket is absurd. Old officers are, on the contrary, likely to make guardians of the best kind. Familiarity with the details of administration gained from long personal experience fits them to come to reasonable conclusions on points about which the average guardian can only talk nonsense and the prospect of their interfering with the grinding of axes by self-seeking members is not one which the community at large need fear.

FATAL ULCERATIVE STOMATITIS AFTER MEASLES.

IN the *British Journal of Children's Diseases* for March Dr. D. McKenzie has reported a case of a very rare complication of measles—ulcerative stomatitis. A well-nourished girl, aged 18 months, was attacked with measles on March 2nd, 1903. The disease ran a moderate course without complications. On March 29th Dr. McKenzie was sent for because the temperature was 104° F. There was a general rash resembling somewhat that of scarlet fever but it was not definitely punctate and the throat was not sore. All the accessible lymphatic glands were enlarged. The pyrexia and rash lasted for three or four days. On April 18th there was fine branny desquamation and the glands had become normal except two left submaxillary glands which were large and hard. On the alveolar margin of the gum above the left upper lateral incisor tooth was an ulcer three millimetres in diameter with a grey rough floor and undermined edges. It was surrounded by red and swollen mucous membrane. During the next few days the temperature was high, the ulcer enlarged, and the submaxillary glands became larger and semi-fluctuating. On April 24th a glandular abscess was opened and scraped under chloroform. The ulcer was scraped, broken-down tissue reaching to the periosteum was removed, and the raw surface was painted with carbolic acid. On the following day the roseolous rash recurred with a temperature of 104° and diarrhœa. The abscess cavity slowly filled up but the ulcer on the gum gradually increased in depth and extent. At the same time the general condition improved. The ulcer was again scraped and painted with carbolic acid. It extended from the alveolar margin of the gum above the incisor and canine teeth to the junction of the mucous membrane of the gum and cheek. Ten days after the appearance of the second rash desquamation was observed. On May 7th the ulcer was scraped for the third time. The left submaxillary region was occupied by a hard brawny mass and the left cheek was red and œdematous. On the 16th the rash appeared for a third time and was duly followed by desquamation. During the next six weeks there was local improvement: the ulcer ceased to spread, the inflammation of the cheek diminished, and the submaxillary induration showed signs of absorption. But the wound enlarged by disintegration of the subcutaneous tissue. On June 17th there was evidence of cerebral complication—vomiting, transient loss of consciousness, photophobia, and retraction of the head. On June 28th the patient died comatose. The necropsy showed thrombosis of the cranial sinuses. The

alveolar abscess yielded post mortem a culture of the staphylococcus pyogenes aureus. The roseolous rashes were probably due to septic absorption. In the Transactions of the Pathological Society of London for 1887 Mr. Jonathan Hutchinson, jun., reported a somewhat similar case but death seemed to have been due to miliary tuberculosis. The patient was a child, aged 21 months, and the ulcers in the mouth persisted for nine months. Such cases appear to be due to the breaking down of the powers of resistance of the body to the invasion of pathogenic microbes by an attack of measles.

WOMEN INEBRIATES.

THERE is no need to dwell on the misery and degradation which follow when a woman becomes a drunkard. But there is every reason why efforts for her reclamation should excite interest and coöperation. At a retreat for such cases at Fallowfield, Manchester, two classes are received. One consists of persons of education who have fallen into the habit of drinking and they employ themselves "in the lighter domestic duties" and in needlework. A smaller fee is paid by patients of the industrial class and they are occupied in more menial household work. "No patient can be admitted to a retreat except at her own request, signed before a justice." She may sign for one or two years' detention, those signing for two being the minority. The report says that by the end of the first year they have become aware of their weakness and of the strength required before they can face temptation. The treatment is simple, without fads: "rigid abstinence, no drugs, cheerful industry, regular exercise, and a sympathetic atmosphere of religious and moral influence." The home has only accommodation for 25 patients and to show how much it is needed and trusted the applications for admission last year were 125, of which 26 were successful.

ISLINGTON MEDICAL SOCIETY.

A MEETING of this society was held on March 22nd, Dr. B. G. Morison being in the chair. Dr. Morison read a paper on the Comparative Merits and Effects of Prescribing and Dispensing in Medical Practice. He maintained that patients could pay, and were willing to pay, both practitioner and druggist. Even in club practice this arrangement had been found to be possible and druggists were not averse to reducing charges in favour of the poor. The custom of prescribing on the part of druggists was largely the outcome of dispensing by medical men. He questioned whether the profits alleged to accrue from the dispensing system were much, if anything, in excess of the expenses and even losses which it entailed. From a professional point of view the practice of dispensing was indefensible. Dr. G. A. Heron stated that during the period from 1869 to 1871 the general practitioners of Margate, with one exception, at his suggestion ceased to dispense. He found on inquiry that in 1903 there were only three practices in that town in which dispensing was carried on and that the medical practitioners as a body strongly objected to return to the original system. He also mentioned the fact that in Scotland prescribing practice was the rule. Mr. J. Smith Whitaker also spoke in favour of the discontinuance of dispensing which he thought would be feasible if medical men in any district would unite for this purpose. Dr. H. Fraser Stokes, Dr. E. S. Tait, and Dr. A. Reid also preferred prescribing but would like to be convinced as to its practicability. Dr. Alexander Morison spoke in similar terms but held that the vested interests of dispensing practitioners must be taken into account. Mr. T. D. Jago saw no need to change the method now existing and considered prescribing in general practice to be impossible. Dr. J. G. Glover, though accustomed to prescribe and expressing some sympathy with the change proposed, was of opinion that it would bear hardly on the poor, especially in London. Any attempt to press it would be unjust as well as impolitic and would tend to drive patients to the prescribing druggist. The interests of the poor deserved every consideration and though much might be done to promote a better understanding with druggists the liberty of medical men who preferred to dispense must not be interfered with. Dr. B. G. Morison proposed to move at the next meeting of the society that a committee should be appointed to inquire into the questions in dispute. This was agreed to.

LEPROSY IN NEW SOUTH WALES.

FULL clinical histories of the patients admitted during 1901 into the New South Wales leper lazaret are given in an official report by Dr. J. Ashburton Thompson, chief medical officer of the Colonial Government and president of the Board of Health. The lazaret is at Little Bay near Sydney. On Jan. 1st, 1901, there were 11 persons under detention. During the year ten persons were reported to the Board under the Leprosy Act, 1890, as being suspected lepers and nine of them were ultimately admitted to the lazaret under warrants. During the year there were five deaths and on Dec. 31st, 1901, there remained under detention 15 persons, including nine whites, four Chinese, one Javanese, and one South Sea Islander. In his remarks on two of the cases Dr. Thompson refers to instances in which the lesions of leprosy have been erroneously attributed to syphilis.

DEATHS AND QUACK MEDICINES.

AT an inquest held on March 30th Mr. Troutbeck inquired into the death of a child aged seven months. Medical evidence was given to the effect that the child weighed only nine pounds and died from meningitis set up by improper feeding. The mother stated that she had fed the child on tinned milk and a food prepared by a local druggist. One of the jurors raised a question as to the sale of foods and pointed out that they were sold as foods fit for children. The coroner said that in the present state of the law the sale of these foods by means of enticing advertisements was allowed and there was not the slightest doubt that this was the cause of a great deal of disease and death. The same remarks applied to patent medicines but in their case the State made an immoral profit on their sale. We are glad to be able to agree with Mr. Troutbeck. The false statements which are made in advertisements are only too flagrant and whether the Government wishes so or not the revenue stamp on patent medicines is taken as an endorsement of the statements about the medicines which are made by the proprietors. A morning contemporary publishes a series of police regulations which have recently been issued in Lübeck regarding unqualified practitioners and very admirable they are:—

Persons wishing to practise medicine professionally without being approved by the State must notify their intention to the Medical Bureau. They must immediately report, with the name, age, and residence of the patient, if they advise or treat a person suffering from fevers and diseases of an inflammatory nature. The rules regarding advertisements are very stringent, reading as follows: Public advertisements by non-approved persons are forbidden, in so far as they are calculated to mislead concerning the training, capacity, or success of such persons, or contain boastful promises. Public advertisement of the objects, apparatus, methods, or means which are applied for the prevention, alleviation, or cure of illness is forbidden, when (a) superior power over and above their true worth is attributed to such objects, apparatus, methods, or means, or the public is misled by the manner in which they are described; or when (b) the objects, apparatus, methods, or means, by the nature of their construction or quality, are calculated to bring about injuries to health. These regulations are to come into force on May 1st and any contravention of the same will be punished by a fine not exceeding 150 marks or by imprisonment.

We commend the rules regarding advertisements to the Commissioner of Police in London and the watch committees in the provinces. If something similar could be

carried out here it would bear hardly on those newspaper proprietors who insert lying advertisements of the kind issued by Pointing and "Dr." McLaughlin and upon that disgraceful quack, "Dr." Bell who scatters his dirty pamphlets broadcast through the assistance of His Majesty's Postmaster-General. Any respectable magazine or newspaper should be ashamed to take money for inserting such advertisements as those to which we have alluded. In this connexion we see that Pointing or the Century Thermal Bath Cabinet Company has been summoned at Marlborough-street police-court regarding his Magic Foot Drafts and for selling the same without a stamp. A fine was imposed of 10*s.* and costs.

THE SPOROZOA IN RELATION TO DISEASE IN MAN AND ANIMALS.

IN the fifth lecture[1] delivered by Professor E. A. Minchin on March 28th at University College, London, the life-histories of certain sporozoa parasitic on man and birds were dealt with, especial attention being given to halteridium, a form found in birds, and to the trypanosoma, or flagellate phase of the same, found in animals and man. Trypanosomes have been found in certain countries to cause the disease called sleeping sickness. The halteridium is a minute curved parasite which is found within the red corpuscles of birds bent in a semicircular form around the nucleus. Professor MacCallum of Toronto showed from a study of halteridia some years ago that a process of conjugation (sexual union) occurs in the body of birds. Mosquitoes which bite birds—e.g., the owl—infected by the halteridium serve as the intermediate hosts within the gut of which three forms of halteridia are developed—viz., an indifferent or neuter form (ookinete), a female form (trypanosoma), and a male form (trypanosoma). The first of these forms multiplies by fission, the second (female trypanosoma) by a sort of parthenogenetic reproduction, while the third (male trypanosoma) multiplies by repeated division and then dies. No conjugation between the male and female trypanosoma forms occurs in the mosquito's stomach and therefore the male trypanosomes must perish of necessity if forced to remain in the mosquito's body. Only in the blood of birds is conjugation known to occur. The life processes are as follows for each form as observed in the blood of birds. The ookinete first extrudes a droplet of protoplasm from the lower end of its body charged with pigment granules. Its nucleus now divides unequally into two parts by karyokinesis (macro- and micro-nuclei) and a spindle of fibres develops from the smaller part (micro-nucleus). This spindle structure ultimately gives rise to the flagellum, undulating membrane, and myonemes of the trypanosoma. The female form undergoes a cycle of changes similar to the above ookinete form, except that the micro-nucleus divides to form eight pairs of small nuclei which then undergo degeneration. The large nucleus (macro-nucleus) now divides unequally into macro- and micro-nuclei and a process of evolution is now gone through similar to that of the ookinete form, terminating in the production of a flagellate female trypanosoma. The male form undergoes division of the micro-nucleus into eight pairs of granules which arrange themselves radially around the macro-nucleus as a centre. Each pair of granules collects around itself a mass of protoplasm, leaving a central mass of residual protoplasm around the macro-nucleus which now degenerates and dies. The eight peripheral nucleated masses are now separated off and each develops a flagellum with mantle and fibres (male trypanosome form). In the body of the mosquito these three forms multiply so long as there is abundance of blood. In case of "famine," however, when the mosquito has not fed itself for some hours many of the neuter and male forms die. The female forms, however, penetrate into the epithelium and swarm back again when the mosquito has gorged itself with blood. Conjugation of male and female forms never occurs in the mosquito's body; it is only known to take place in the bird or warm-blooded animals (Schaudinn). The neuter forms and the smaller female forms pass into the circulation of the mosquito and thence into the pharyngeal cavity, whence they are ready to infect a bird or other animal which the mosquito bites. Others enter the ovary of the mosquito and infect the ova, penetrating between the yelk granules and growing within the embryo of the next generation of mosquitoes (hereditary infection). Those which have been inoculated into birds by the bite of the mosquito attach themselves to the red corpuscles of the former by the flagellum and then penetrate within the corpuscles, losing the flagellum and assuming the characteristic curved form (halteridium) once more. At night these endoglobular halteridia issue forth into the blood plasma and some of them develop flagella, swim about freely in the blood (motile forms), while the others remain without flagella (non-motile forms). Both these forms multiply by night, the free-swimming forms re-entering the red corpuscles. Schaudinn, from his studies of these trypanosome forms, anticipates that a trypanosome stage of the malarial parasite will be found in the human body.

[1] References to the first, second, third, and fourth lectures will be found in THE LANCET of March 12th, p. 736, and 26th, p. 889, and April 2nd, p. 900.

THE STATE REGISTRATION OF NURSES.

IT was not to be expected that the manifesto issued by those experts who are opposed to the State registration of nurses, upon which we commented in THE LANCET of April 2nd, p. 946, would be allowed to pass without notice by other experts who take the opposite view. We have now received another manifesto from the Society for the State Registration of Trained Nurses signed by Miss Louisa Stevenson, president of the society and member of the board of management of the Royal Infirmary, Edinburgh; Mrs. Bedford Fenwick, honorary secretary of the society, president of the International Council of Nurses, and Member of the Distinguished Order of the Greek Red Cross; and Miss Isla Stewart, senior vice-president of the society, matron of, and superintendent of nursing at, St. Bartholomew's Hospital, president of the Matron's Council of Great Britain and Ireland, and president of the League of St. Bartholomew's Hospital Nurses. Besides these the signatories include a large number of ladies who are representatives of nursing leagues, vice-presidents of the society, or matrons of hospitals, or who are prominent in educational matters or in various spheres of women's work. We do not notice the name of any medical man. From the purely nursing point of view the manifesto in favour of State registration is as convincing as that against it. If, on the one hand, we have against registration the name of Miss Eva Lückes, matron of the London Hospital, we have in favour of registration the name of Miss Isla Stewart, matron of St. Bartholomew's Hospital. The Bill promoted by the Society for State Registration seeks to establish a central and representative nursing council to which all questions of training, discipline, and other professional matters will be referred and by which a register of trained nurses will be kept. Thus, the society wishes to do for nurses what the General Medical Council does, or is supposed to do, for the medical profession; in fact, it will do more, for "the training schools will certainly in every instance be required to testify that candidates possess the necessary personal qualities." We do not envy the training schools their task in the event of the Bill becoming law; however, as there is no doubt that both those who are against registration and those who are in favour of it are agreed upon the desirability of none but

capable, trustworthy women being employed as nurses a meeting might be arranged at which representatives from both sides could attend. Then a conjoint course of action might be arrived at.

THE DISTRIBUTION OF PLAGUE.

PLAGUE has been present in our South African colonies since February, 1901, when a suspicious case was reported to the medical officer of health of the Cape Colony as occurring at Cape Town. Three days later this was finally diagnosed as plague. On Feb. 14th an advisory board was appointed and a quarantine station was prepared to which "suspects" were removed. Between February, 1901, and August, 1902, 997 cases were officially reported, but from August, 1902, to March, 1904, only occasional cases were notified until for the week ending March 5th, 1904, there were eight cases reported at Port Elizabeth. For the week ending March 12th there were 3 further cases reported at East London and 3 at Uitenhage. Plague-infected rats were found at Port Elizabeth and at East London but in the Cape Town and Harbour Board area of 176 rats examined during the week none was affected with plague. In Natal plague first appeared on Dec. 5th, 1902, between which date and August, 1903, when the disease was practically stamped out, 223 cases had been notified. Durban was the heaviest sufferer, being a seaport, and there 174 cases were notified. In the Transvaal plague appeared early in March, 1904, and a telegram from Lord Milner dated April 2nd states that on that date the position was as follows: Total number of cases 75—in whites 9, in coloured persons 2, in Asiatics 51, and in natives 13. Suspected cases: whites 6, coloured persons 2, Asiatics 6, and natives 36; total 50. Ascertained deaths: whites 7, Asiatics 49, and natives 6; total 62. Suspected deaths: natives 5.

THE CASSEL FUND TRAVELLING OPHTHALMIC HOSPITAL IN EGYPT.

OUR readers will recollect that in the beginning of 1903 Sir Ernest Cassel placed at the disposal of the Egyptian Government a sum of £40,000 to be used for the benefit of sufferers from the diseases of the eye which are so prevalent in Egypt. An object to be kept in view was also the training of native medical men in the diagnosis and treatment of such diseases according to modern methods. The Egyptian Sanitary Department, over which Sir Horace Pinching presides, ultimately decided to establish a travelling ophthalmic hospital or dispensary, the system being that a surgeon should proceed leisurely through the provinces with tents so that patients would not have to make long journeys to obtain treatment. Mr. A. F. MacCallan, who had held various offices at the Royal London Ophthalmic Hospital (Moorfields) was accordingly appointed to organise and to direct the enterprise. In an article recently published in the *Wochenschrift für Therapie und Hygiene des Auges* Dr. Alfred Osborne states that this system of travelling ophthalmic hospitals, now introduced into Egypt, originated about ten years ago in Russia where it has proved very successful. One of the first advocates of these Russian hospitals was von Bellarminow and their work has been described by Walter of Odessa and Andogsky of St. Petersburg. They are supported by a fund instituted by the Empress Marie Alexandrowna. In the year 1894 there were 21 of them and in 1901 there were 32. Dr. Osborne then goes on to describe what he saw on a visit made to the Egyptian travelling hospital while it was stationed near the town of Menouf in the west of the Nile Delta. It consisted of eight Indian tents and a kitchen of sun-dried bricks. The largest tent was used for operations of which on an average six were performed daily, about five-sixths of the total being operations for entropium (trichiasis). There were two tents for the accommodation of in-patients, only the more severe cases, especially those which required intra-ocular operations, being admitted. In another tent out-patients were treated by Mr. MacCallan's Arab assistant trained in Cairo. Including this assistant the staff of nurses and servants consists of about ten persons for whose accommodation three tents are provided. Great numbers of patients come seeking treatment and the large proportion of females who present themselves shows that the hospital has secured the confidence of the Mahomedan population.

RADIO-ACTIVITY A PROPERTY OF THE DROITWICH BRINE BATHS.

WE have received a communication from Dr. P. A. Roden and Dr. John Wilkinson in which it is shown that Droitwich brine yields on boiling a gas which exhibits marked radio-active effects. They submitted to Mr. F. Soddy of University College, London, some of the brine, and although only a small quantity, which, moreover, had been standing for at least 36 hours before the test, was taken for the experiment, yet the gas given off proved to be quite distinctly radio-active. Further investigation is being made into the radio-active value of the brine with the assistance of Dr. Alexander Muirhead. It seems possible that radio-activity is an important factor in balneo-therapeutics. Hitherto much of the benefit gained by a course of waters has been ascribed to mere mechanical or thermic action, coupled with that of the constituents dissolved in the water. In the experience of Dr. Roden and Dr. Wilkinson a further explanation in the case at any rate of Droitwich brine must be sought. Cases are constantly met with, they assert, which when placed in all respects under similar conditions at different spas do certainly obtain benefit from one water and not from another, and this apart from internal treatment. It is highly probable, they add, that different reactions may occur from the use of baths containing different constituents and possibly such reactions may be due not only to those constituents but also to varying radio-activity. It seems to us that a fresh, careful, practical study of the waters employed at all the health resorts in this country in the treatment of disease should be undertaken on the lines indicated. It can hardly be supposed, however, that all waters give relief merely because they are radio-active. Such constituents as sulphuretted hydrogen, sulphides, iodides, barium, and calcium salts when present in waters have not only specific effects when employed internally but also when exhibited in the form of baths.

THROMBOSIS OF THE JUGULAR VEINS IN PULMONARY TUBERCULOSIS.

THROMBOSIS of the jugular veins is a very rare complication of pulmonary tuberculosis. In the *New York Medical Journal* of March 5th Dr. C. J. Aldrich has published a case and reviewed the literature of the subject. After a diligent search he could find only nine recorded cases. In four the thrombosis was due to causes external to the veins, pressure of tuberculous glands or adhesions. In the remaining cases the thrombosis appeared to be due to phlebitis from internal causes. In the case which is related by Dr. Aldrich a woman suffering from advanced pulmonary tuberculosis was seized with severe pain in the left side of the neck. Examination showed fulness of the supraclavicular fossa and a tender, slightly red tumour at the lower part of the internal jugular vein. The pain extended to the upper part of the left chest and arm. The veins of the left side of the neck became enlarged. Three days later there

was peculiar puffy swelling of the hand, which did not pit on pressure and felt like an elastic cushion. The swelling increased and extended up the forearm to the middle of the arm. After a week it reached its height when a thrombus could be felt in the axillary vein. The superficial veins of the upper chest on the left side were enlarged and the lower part of the face was slightly swollen. A thrombus could be traced upwards in both the internal and external jugular veins for a distance of over two inches, while below was a hard tender cord which disappeared behind the clavicle. After about two weeks the swelling of the hand began to diminish. The tenderness and swelling at the root of the neck had almost disappeared when she was seized with pain on the right side of the neck where a red and tender swelling similar to that of the left side developed. The supraclavicular fossa was swollen and the superficial veins of the upper chest were enlarged. Three days later the right hand began to swell and soon it reached the size attained by the left. The forearm became affected and the axillary vein could be felt thrombosed. The thrombosis then extended to the basilic vein. The left hand remained swollen until death which took place four weeks after the onset of the thrombosis. Without warning the patient became unconscious, evidently from thrombosis of the sinuses of the brain. Examination showed extension upwards of the thrombus in the internal jugular vein with considerable œdema of the face and neck on that side. A necropsy was not allowed.

INTERNATIONAL CONGRESS OF SCHOOL HYGIENE.

THE first meeting of the International Congress of School Hygiene took place at Nuremberg on April 5th under the patronage of His Royal Highness Prince Ludwig Ferdinand of Bavaria. The direction of the Congress was in the hands of the chairman of the Allgemeiner Deutscher Verein für Schulgesundheitspflege, Professor Dr. H. Griesbach, with the support of the following foreign societies: Ligue des Médecins et des Familles pour l'Amélioration de l'Hygiène Physique et Intellectuelle dans les Écoles, the Schweizerische Gesellschaft für Schulgesundheitspflege, the Allgemeen Pædologisch Gezelschap in Antwerpen, the Vereeniging tot Vereenvondiging van Examens en Onderwijs, and an English committee formed by representatives of the Royal College of Physicians of London, the Royal College of Surgeons of England, the Medical Officers of Schools Association, the London School Board, the Sanitary Institute, London, and the Incorporated Society of Medical Officers of Health, with Sir Lauder Brunton as President and Dr. James Kerr, the medical officer to the London School Board, as honorary secretary. The inaugural meeting of the Congress was held in the large hall of the Apollo Theatre on April 5th at 9 o'clock and was opened by His Royal Highness Prince Ludwig Ferdinand of Bavaria in person. The chair was taken by Professor Dr. Griesbach, of Mülhausen, who requested the Prince to open the Congress. The Prince said that it was with the greatest pleasure that he declared the first International Congress of School Hygiene open. He welcomed to Nuremberg the delegates from neighbouring States and distant lands. Professor Dr. Griesbach said that no less than 20 States were represented at the Congress and that Turkey and Italy alone were unrepresented. Delegates from the various countries then thanked the Prince and the committee for their welcome to the Congress. Dr. Eichholz, as representative of the University of Oxford, returned thanks on behalf of Great Britain.

THE London County Council has announced that chickenpox is to be a notifiable disease for a period of four months from April 8th. Every medical man in the administrative county of London has received a notice informing him that in case he should be in doubt as to whether a case under his care is or is not one of small-pox he can without fee obtain the opinion of either Mr. S. Bingham, formerly medical superintendent of one of the Metropolitan Asylums Board small-pox hospitals, or of Mr. W. McC. Wanklyn, late small-pox referee to the Metropolitan Asylums Board. Letters should be addressed: Medical Consultant, Public Health Department, 8, St. Martin's-place, Trafalgar-square, W.C. This arrangement will continue until August 7th.

Mr. F. W. Lowndes, the honorary secretary of the United Kingdom Police Surgeons' Association, has requested us to state that he will send a copy of the Statutory Declaration and Orders, 1903, to any member of the association or any medical practitioner on receipt of a letter addressed to him at 40, Knight-street, Liverpool, with two penny stamps inclosed. This important official paper gives full details of the increased fees and allowances sanctioned by the Home Secretary to medical witnesses on the recommendation of the Departmental Committee, 1902.

Professor Seeley of King's College, London, proposes to conduct ten geological excursions which should be of interest to all London sanitarians. The object of the excursions will be to examine the main channel of the Thames and some of its tributaries. A beginning will be made on April 23rd at Purfleet where the Thames flows over the chalk.

THE members of the medical staff of the West London Hospital will hold a conversazione, in connexion with the Post-Graduate College, at the hospital on Wednesday, April 20th, at 8.30 P.M.

WHO PERFORMED LITHOTOMY ON MR. SAMUEL PEPYS?[1]

BY D'ARCY POWER, F.S.A., F.R.C.S. ENG.,
TREASURER OF THE SAMUEL PEPYS CLUB.

WE celebrate to-night the two hundred and forty-sixth anniversary of one of the great events in the life of Samuel Pepys—the day when he was successfully cut for stone at the house of Mrs. Turner in Salisbury-court, Fleet-street. The recollection of the day was often in his thoughts and the entry in his Diary on March 26th, 1660, is a faithful reflection of his usual state of mind at each return of spring. It runs: "This day it is two years since it pleased God that I was cut of the stone at Mrs. Turner's in Salisbury Court. And did resolve while I live to keep it a festival, as I did the last year at my house, and for ever to have Mrs. Turner and her company with me." Two years later, on March 26th, 1662, the entry is: "Up early. This being by God's great blessing the fourth solemn day of my cutting for the stone this day four years, and am by God's mercy in very good health. ..... At noon came my good guests, Madame Turner,[2] The.,[3] and Cozen Norton and a gentleman, one Mr. Lewin of the King's Life-Guard. ..... I had a pretty dinner for them—viz., a brace of stewed carps, six roasted chickens and a jowl of salmon hot for the first course: a tanzy and two neats' tongues and cheese the second: and were very merry all the afternoon talking and singing and piping upon the flageolette. ..... We had a man cook to dress the dinner to-day and sent for Jane to help us." This is but a single example of many such pleasant dinners and in continuation of them we have met here to-night.

But the club is founded to elucidate as well as to celebrate events in the life of Mr. Pepys and I propose to ask to-night who operated upon Mr. Pepys? I do not think

[1] A paper read at the second meeting of the Samuel Pepys Club on March 26th, 1904.
[2] Daughter of John Pepys of South Creake and wife of Serjeant John Turner, Reader in Law.
[3] Her daughter, afterwards Lady Harris.

that he anywhere mentions the name of the surgeon, but he was on terms of intimacy with two surgeons, Mr. James Pierce and Mr. Thomas Hollier. James Pierce seems to have been under the protection of Lord Sandwich and it was in this manner no doubt that Pepys became acquainted with him. After the Restoration he was appointed surgeon to the Duke of York, Surgeon-General of the Fleet, and Groom of the Privy Chamber to the Queen. He hoped to be appointed surgeon to St. Thomas's Hospital by the influence of the Duke of York when Tom Woodall was killed in a drunken quarrel in 1666, but I do not find that he was ever elected to the office and he must not be mistaken for Mr. William Pearce who was some time a colleague of Mr. Hollier at St. Thomas's Hospital. James Pierce was master of the Barber-Surgeons' Company in 1675 and was at that time surgeon to the King. Although Pierce was well known to Mr. Pepys he does not seem to have consulted him professionally on any occasion and I think we may say with certainty that Pierce was not his lithotomist.

Thomas Hollier was a man of different calibre. He was appointed surgeon "for scald heads" at St. Thomas's Hospital in 1638 and on Jan. 25th, 1643-44 he was chosen surgeon to the hospital in place of Edward Molines, surgeon for the cutting of the stone to the hospital, who had left his place to join the King's army at the beginning of the war. Molines was taken in arms against the Parliament at Arundel Castle and was in consequence deprived of his office as surgeon to St. Thomas's Hospital on the day when Hollier was appointed. After the Restoration King Charles ordered the governors to reinstate Molines, but as the place had already been well filled by Hollier the governors were unwilling to displace him. There was a considerable correspondence and the difficulty was solved at last by the appointment of Molines as a fourth or additional surgeon, the stipend of the surgeons being reduced from £40 to £30 apiece.

Mr. Hollier acted as a second warden of the Barber-Surgeons' Company in 1665, when Mr. Serjeant-Surgeon Wiseman was master, and was himself master of the Company in 1673. In 1669 the College of Physicians bought his house and grounds, extending from Warwick-lane to the City walls, for £1200 to build a new college in place of the college in Amen-corner which had been destroyed by the Great Fire. Hollier's position as lithotomist gave him unusual opportunities to perfect his skill and he is said to have cut no less than 30 persons for stone in one year without a single death, a result of which he might be justly proud were he living amongst us now. Hollier seems to have been the trusted medical adviser of Mr. Pepys, for he bled him, gave him sound advice on many occasions, and when Mrs. Pepys was ill he was summoned to attend her, and though a surgeon he refrained from operating. Sir Frederick Bridge, in his recently published book "Samuel Pepys, Lover of Musique" (p. 63), draws attention to certain entries in a volume of the Sloane MSS. at the British Museum.[4] These entries consist of two prescriptions written by Dr. J. M., the second being countersigned by Dr. G. Jolly. The first prescription is headed "Before he was cut for the stone by Mr. Hollier" and is ordered "for Mr. Peapes." It is a soothing draught, such as might still be given with advantage to a patient whose bladder was inflamed. It contains liquorice, marsh mallow, cinnamon, milk, rose water, and the whites of eggs carefully distilled over a slow fire. The dose ordered was six ounces with an ounce of syrup of althea,[5] to be taken daily in the morning and at bedtime. On the next page of the Sloane MS. is a second prescription for a draught to be in readiness when he was cut. "For Mr. Peapes who was cut for ye stone by Mr. Hollier, March ye 28th (1658) and had a very great stone taken that day from him." This prescription again is for a cooling and demulcent drink such as we still give to a patient whose mouth is parched after an operation. Its chief constituent was lemon juice to which a little syrup of radishes was added. It shows that Mr. Pepys was expected to be feverish after the operation, but the surgeons did not think he would be collapsed or dangerously ill, for the prescription especially mentions that musk was not to be employed and we know that musk in those days was held to be as sovereign a remedy for collapse as is alcohol now. Indeed, few people died in a regular way until they had received a viaticum of musk. It is curious that the prescription should be dated March 28th when Pepys says repeatedly that he was operated upon on March 26th, but we all know that there are other and similar discrepancies of date in the Diary which can in no way be reconciled.

I can find nothing about Dr. Jolly, who signs the prescription, except the reference to him under date, Feb. 27th and 28th, 1662, where Pepys says about a demonstration of anatomy at the Hall of the Barber-Surgeons: "Dr. Scarborough upon my desire and the company's did show very clearly the manner of the disease of the stone and the cutting and all other questions that I could think of ..... how the water comes into the bladder through the three skins or coats just as poor Dr. Jolly has heretofore told me." It appears from this passage that Dr. Jolly had died between the time Pepys was cut and the date of his beginning the Diary in January, 1659-60. There is no mention of Dr. Jolly in the Roll of the College of Physicians, nor was he a graduate of the University of Oxford.

The initials Dr. J. M. at the foot of each prescription stand, I have very little doubt, for Dr. James Moleyns, the leading lithotomist of his time, father of Edward Molines referred to above, and in all probability the master and teacher of Thomas Hollier. I feel a personal interest in James Moleyns because he was a predecessor in the great hospital of St. Bartholomew which I have the honour to serve. He held the office of "surgeon for the stone" both at St. Bartholomew's and at St. Thomas's Hospitals. At a time when medicine and surgery were absolutely divorced and surgery held a very inferior position James Moleyns was one of the very few people licensed by the College of Physicians to administer internal medicines in surgical diseases. His licence is dated Sept. 24th, 1627. He died in 1686 and is buried in St. Bride's, Fleet-street.

We have some interesting information in the books at St. Bartholomew's Hospital about Dr. James Moleyns or Mullins. He succeeded Mr. Robert Murrey, surgeon to the Lock Hospital, in 1622 and after a conference between the governors of St Bartholomew's and those of St. Thomas's Hospitals duties were assigned to him in the following order:—

> Vicesimo die Januarii Anno Dni. 1622-3.
>
> It is ordered by the Governors of this Hospitall that James Mullins Chirurgion in consideracon of his care and paynes which he is to take in cuttinge and cureinge of poor diseased p'sons of the Stone, and the greifs and Malladies hereunder named, brought to the sev'all hospitalls of St. Barth'ewes and St. Thomas in Sowthwarke, shall have the yearly stipend of xxxli. per anm. from XXmas last past soe longe as he shall discharge the same cures to the good likeinge of the Governors of the said hospitalls viz. xvl. of his said stipend to be paid him quarterly from this hospitall and the other xvl. from St. Thomas' Hospll. and he is alsoe to be allowed two pounds of towe for every patient for theire more easie and warmer dressinge.
>
> For the annuall stipend of thirty pounds I under take (wth. God his helpe) my best skill and experience the manuall operacon and chirurgicall cuer of these Iasuinge Maladies viz.
>
> The Cureinge by insition the stone in the yard or Bladder.
>
> The cureinge of the rupture or falling downe of the Intestines or gutts into the Codds by Cuttinge.
>
> The Cureinge by Insition the Carnosity or fleshie substance in the Codds.
>
> Also the Curinge of Wenns by Insition.
>
> Desiringe that for every patient I may have the allowaunce of 2 pounds of towe for theire easier and warmer dressinge.

It will appear from these statements that the governors of the two hospitals appointed a special surgeon for the treatment of those conditions which had so far fallen into the hands of quacks (lithotomists, hernia specialists, and fistula curers) that the ordinary surgeons left them untended. It was no doubt due to these wise orders and to the appointment of suitable persons at the hospitals that lithotomy and hernia once more came to be considered a part of legitimate surgery. Now I think it is clear from the facts I have brought together that Mr. Pepys was operated upon by Mr. Hollier who had called into consultation his old master, Dr. James Mullins. He thus came under the care of the two best lithotomists of the time and I suspect that they used more than two pounds of tow for his dressings. If Mr. Hollier was his lithotomist there is a good reason why he should have taken rooms at Mrs. Turner's in Salisbury-court, for he would wish to be as near as possible to his surgeon who was living in Warwick-lane.

[4] Sloane MSS., No. 1536, f. 63, margin.

[5] The syrup of althea itself was: R Roots of Althea two ounces; roots of grass, asparagus, Liquorice cleansed; Raisons stoned; ana half an ounce. Taps of marsh mallow; leaves of mallow, Pellitory; Burnet; Saxifrage; Plaintain; White and Black Maidenhair; ana M. (a handful); Red Cicers an ounce; of the four greater and lesser cold seeds ana three ounces. Infuse them a whole day in clear water, lb. vi. Boil to the consumption of two pounds; then strain and press and with sugar, lbs. iiss. make a syrup in Balneo Mariae according to Art.

Looking Back.

FROM

THE LANCET, *SATURDAY*, April 8, 1826.

Case of apparent Superfœtation. By JOSEPH FITHIAN, M.D., of Woodbury, N.J.

IT has been a disputed point in physiology, and is to this day, whether superfœtation does ever take place in the animal economy.

We know, that nature, in the production of our race, generally pursues an undeviating and uniform course, which would lead us to believe, that whether two or more children are born at one birth, they are begotten nearly together, if not at the same time.

Many facts, however, of a curious and interesting nature are from time to time communicated, which appear to be exceptions to this general rule; and, among others, the following favours the hypothesis that superfœtation does occasionally occur.

Mrs. W. was delivered of a fine healthy child at the full time without any difficulty attending the birth.

After the labour was over, and the assistants were preparing to get her to bed, they discovered something which, from its uncommon appearance, induced them to call my attention to it.

Upon examining this substance, it proved to be a fœtus three or four inches long, with its membranes and placenta complete; all of a fresh, healthy appearance, and had undoubtedly been alive and healthy up to the time of the labour.

I have frequently seen abortions at every period of gestation, and from the appearance of this fœtus, had I been called to see it without any knowledge of the circumstances, I should without hesitation have pronounced it an abortion at the third or fourth month. It had the large head, small extremities, and general appearance which characterize a fœtus at that age.

I have communicated the above fact, as it occurred to me in my practice. I will leave it for others to draw their inferences.—*Ibid.*[1]

CENTRAL MIDWIVES BOARD.

A MEETING of the Central Midwives Board was held at the Board Room, Suffolk-street, S.W., on March 24th, Dr. F. H. CHAMPNEYS being in the chair, when the following business was transacted.

1. On consideration of applications for approval of certificate as a qualification under Section 2 of the Act the certificate of the following institution was approved: National Maternity Hospital, Dublin.

2. The following institutions were approved for the training of midwives under Section C of the rules, subject to an undertaking to comply with the requirements of Section E of the rules: Birmingham Workhouse Infirmary, Bristol Royal Infirmary, Brownlow Hill Workhouse Hospital, Liverpool, Essex County Cottage Nursing Society, Gloucester District Nursing Society, Hull Lying-in Charity, and Ipswich Nurses' Home.

3. The following registered medical practitioners were approved as teachers under Section C 1 (3) of the rules: Mr. A. B. Batley, Mr. A. B. Calder, Dr. John Gutch, Mr. E. S. Hoare, Dr. Wilfred R. Kingdon, Dr. E. J. Maclean, Dr. Thomas Pimley, and Mr. Penrose L. W. Williams.

4. The following certified midwives were approved under Section C 1 (2) for the purpose of signing certificates of attendance (Forms III. and IV.): Eleanor Heatley, E. S. Sibery, E. S. Tate, and Bessie M. Worrall.

5. After consideration of applications for certificates the names of 849 women were passed under Section 2 of the Act and ordered for entry on the roll. The following shows the separate numbers of the various qualifications at present entered on the roll: Royal College of Physicians of Ireland, 1; Obstetrical Society of London, 953; Rotunda Hospital, 43; Coombe Hospital, 12; Queen Charlotte's Hospital, 52; Liverpool Lying-in Hospital, 15; British Lying-in Hospital, 2; Glasgow Maternity Hospital, 32; St. Mary's Hospital, Manchester, 53; City of London Lying-in Hospital, 6; Royal Maternity Hospital, Edinburgh, 5; Salvation Army Maternity Hospital, 3; and women in *bonâ-fide* practice, July, 1901, 2238; the total enrolled being 3415.

[1] Philadelphia Journal, February.

MEDICINE AND THE LAW.

The Conviction of an Abortionist.

AT the Old Bailey on March 25th Mr. Justice Grantham passed a sentence of seven years' penal servitude upon Bertha Bandach, an elderly German woman, who cannot be regarded as having been treated with undue severity. She was convicted of manslaughter upon facts which, strictly speaking, laid her open to indictment for murder, for she had brought about the death of a woman by procuring abortion upon her, which had been followed by blood poisoning. Moreover, it was proved that Bandach had not broken the law thus for the first time. The police had had good reason to regard her with suspicion and had long done so. Not many months before the crime which formed the subject of her conviction she had evidently procured the miscarriage of the same woman; she had been tried on a similar charge and acquitted in 1903 and in 1895 had been convicted and sentenced to five years' penal servitude. An interesting question of evidence was raised during her trial owing to an attempt made to suggest that traces of injury inside the uterus of the deceased discovered by post-mortem examination might have been accidentally inflicted by the victim herself in using a vaginal syringe. In addition to medical testimony as to the difficulty which she would have found in reaching the spot indicated, the Treasury claimed the right to give evidence of similar "accidents" having happened in other cases with which the prisoner had been associated. This evidence was admitted by the judge and it is clearly of great importance that it should be so as the suggestion of an innocent accident, however unconvincing it might seem to medical men, is a natural defence to be raised at the trial of an abortionist. It is to be hoped that the operation of the Midwives Act when it comes more fully into force will prevent such women as Bandach from carrying on their trade, as she did, behind brass plates bearing the inscription of "midwife." The case also points to the defects of the existing system of death certification. The deceased woman would apparently have been buried without further inquiry, owing to the medical man who attended her when dying having been misled by statements as to her habits of life and previous condition of health, had not another practitioner who had treated her after the former miscarriage, which has been mentioned, communicated with the coroner. Bandach will be under restraint for some years to come but a woman who has found that the criminal exercise of such skill as she may possess can be made profitable is not likely to be reformed and it is for the safety of the public as well for the punishment of her offence that she is imprisoned.

Messrs. Burroughs, Wellcome, and Co. and the "Tabloid" Trade Mark.

The Court of Appeal has upheld the judgment of the late Mr. Justice Byrne refusing to remove from the register of trade marks the word "tabloid," placed there under the Patents, Designs, and Trade Marks Act of 1883. The appeal was made solely upon this issue, the question of the substitution of other wares for "tabloids," when "tabloids" were ordered, not being again raised. The question for the decision of the court, although strictly speaking one of law, involved really, as Lord Justice Vaughan Williams pointed out, a matter of fact as to what the word "tabloid" actually conveyed to those who heard it at the date of registration in 1884. The substance of the judgments delivered was that according to recent decisions a word registered as a "distinctive fancy word not in common use" must not be descriptive but need not be absolutely unsuggestive of the goods to which it is applied. Upon reviewing the cases dealing with the matter the court was of opinion that tabloid although "suggestive" was not at the time of registration "descriptive." Both Lord Justice Stirling and Lord Justice Cozens Hardy expressed themselves as not entirely free from doubt, the latter questioning whether ten years ago the word "tabloid" would have been left upon the register and adding "the swing of the judicial

pendulum has been very great and the extreme point of the swing is to be found, I think, in the present case." No doubt Messrs. Burroughs, Wellcome, and Co., who are to be congratulated upon having maintained the judgment given in their favour on Dec. 14th, 1903, are to some extent at a disadvantage owing to the public adoption of the word which they invented for their own benefit. "Tabloid" is now a convenient word for the expression of "much in a small compass," a sort of colloquial synonym of *multum in parvo*, and no doubt many people would be surprised to learn that 20 years ago the term was unknown to them.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 8076 births and 5464 deaths were registered during the week ending April 2nd. The annual rate of mortality in these towns, which had been 19·0, 19·7, and 18·7 per 1000 in the three preceding weeks, was again 18·7 last week. In London the death-rate was 18·8 per 1000, while it averaged 18·6 per 1000 in the 75 other large towns. The lowest death-rates in these towns were 8·4 in Walthamstow, 9·0 in Hornsey, 9·4 in Leyton, 11·0 in Willesden, 11·2 in Ipswich, 11·8 in Devonport, 12·3 in Reading, and 12·5 in East Ham and in Hastings; while the highest rates were 23·6 in Birkenhead, 23·9 in Swansea, 24·5 in Birmingham and in Manchester, 24·6 in Tynemouth, 24·8 in Warrington, 25·0 in Bury, 25·3 in St. Helens, and 28·6 in Rochdale. The 5464 deaths in these towns last week included 640 which were referred to the principal infectious diseases, against 500, 540, and 532 in the three preceding weeks; of these 640 deaths 234 resulted from whooping-cough, 211 from measles, 71 from diphtheria, 58 from diarrhœa, 32 from scarlet fever, 26 from "fever" (principally enteric), and eight from small-pox. No death from any of these diseases was registered last week in Hastings, Bournemouth, Southampton, Northampton, Ipswich, Burton-on-Trent, Handsworth (Staffs.), Kings Norton, Wigan, Barrow-in-Furness, Halifax, Rotherham, or Stockton-on-Tees; among the other towns the highest death-rates from these diseases were recorded in Hanley, Birmingham, Coventry, St. Helens, Warrington, Bolton, Bury, Manchester, West Hartlepool, and Swansea. The greatest proportional mortality from measles occurred in Norwich, Hanley, Wallasey, St. Helens, Bury, Manchester, Salford, Burnley, and Leeds; from diphtheria in East Ham, and Hanley; and from whooping-cough in Wolverhampton, Birmingham, Coventry, St. Helens, Warrington, Bolton, West Hartlepool, Gateshead, and Swansea. The mortality from scarlet fever, from "fever," and from diarrhœa showed no marked excess in any of the large towns. Of the eight fatal cases of small-pox registered in these towns last week, three belonged to London, two to Tynemouth, one to Nottingham, one to Oldham, and one to Gateshead. The number of small-pox patients remaining under treatment in the Metropolitan Asylums hospitals, which had been 54, 74, and 110 on the three preceding Saturdays, had further risen to 126 on Saturday, April 2nd; 42 new cases were admitted during the week, against 21, 26, and 54 in the three preceding weeks. The number of scarlet fever cases in these hospitals and in the London Fever Hospital at the end of the week was 1570, against 1601, 1624, and 1585 at the end of the three preceding weeks; 153 new cases were admitted during the week, against 192, 176, and 145 in the three preceding weeks. The deaths in London referred to pneumonia and diseases of the respiratory system, which had been 414, 375, and 383 in the three preceding weeks, declined again to 370 last week, but were 132 above the number in the corresponding period of last year. The causes of 57, or 1·0 per cent., of the deaths in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Bristol, Leicester, Nottingham, Salford, Bradford, Newcastle-on-Tyne, and in 43 other smaller towns; the largest proportions of uncertified deaths were registered in Birmingham, Liverpool, St. Helens, Warrington, Manchester, Burnley, Preston, and Sheffield.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been 21·5, 23·0, and 22·3 per 1000 in the three preceding weeks, further declined to 20·6 per 1000 during the week ending April 2nd, but was 1·9 per 1000 in excess of the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 13·6 in Leith and 17·5 in Aberdeen to 22·4 in Greenock and 26·2 in Perth. The 681 deaths in these towns included 23 which were referred to measles, 23 to whooping-cough, nine to diarrhœa, five to small-pox, five to scarlet fever, four to "fever," and three to diphtheria. In all, 72 deaths resulted from these principal infectious diseases last week, against 68, 85, and 86 in the three preceding weeks. These 72 deaths were equal to an annual rate of 2·2 per 1000, which was also the mean rate last week from the same diseases in the 76 large English towns. The fatal cases of measles, which had been 20, 23, and 22 in the three preceding weeks, rose again last week to 23, of which 12 occurred in Glasgow, four in Dundee, and four in Paisley. The deaths from whooping-cough, which had been 21, 24, and 29 in the three preceding weeks, declined again to 23 last week and included eight in Glasgow, five in Dundee, three in Edinburgh, two in Aberdeen, two in Paisley, and two in Leith. The fatal cases of diarrhœa, which had been 13, 18, and 15 in the three preceding weeks, further declined last week to nine, of which seven were registered in Glasgow and two in Dundee. The deaths from small-pox, which had been five, two, and seven in the three preceding weeks, declined again to five last week, and all occurred in Glasgow. The fatal cases of scarlet fever, which had been two in each of the two preceding weeks, increased last week to five, of which three were recorded in Glasgow, where three of the four deaths from "fever" were registered also. The deaths referred to diseases of the respiratory organs in these towns, which had been 156, 185, and 165 in the three preceding weeks, further declined last week to 157, but were 36 in excess of the number in the corresponding period of last year. The causes of 31, or nearly 5 per cent., of the deaths in these towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 28·3, 27·7, and 30·4 per 1000 in the three preceding weeks, declined again to 28·5 per 1000 during the week ending April 2nd. During the 13 weeks ending on that date the death-rate has averaged 28·0 per 1000, the rate during the same period being 18·3 per 1000 both in London and in Edinburgh. The 207 deaths of persons belonging to Dublin registered during the week under notice showed a decline of 14 from the number in the preceding week and included 20 which were referred to the principal infectious diseases, against 11, 20, and 14 in the three preceding weeks; of these, 11 resulted from whooping-cough, four from measles, two from "fever," two from diarrhœa, and one from scarlet fever, but not any from small-pox or diphtheria. These 20 deaths were equal to an annual rate of 2·8 per 1000, the death-rates during the same period from the principal infectious diseases being 2·3 in London and 0·6 in Edinburgh. The fatal cases of whooping-cough, which had been six, 13, and five in the three preceding weeks, rose again last week to 11. The deaths from measles, which had been four and five in the two preceding weeks, declined again to four last week. The 207 deaths in Dublin last week included 36 of children under one year of age and 59 of persons aged 60 years and upwards; the deaths of infants showed a considerable decline, while those of elderly persons were slightly in excess of the number in the preceding week. Seven inquest cases and five deaths from violence were registered, and 84, or more than two-fifths, of the deaths occurred in public institutions. The causes of nine, or more than 4 per cent., of the deaths registered in Dublin last week were not certified.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Fleet Surgeon W. G. Stott to the *Lancaster*. Staff Surgeon H. B. Hall to the *Endymion*. Surgeons: G. Taylor to the *Endymion*; H. G. T. Major to the *Bulwark*; E. H. Ross to the *Lancaster*; A. D. C. Cummins, C. W. Woods, and B. R. Bickford to the *Vivid*, additional, N. S. Meiklejohn, H.

Woods, C. J. Boucher, F. M. V. Smith, D. H. Vickery, and W. G. M. Anderson to the *Fire Queen*, additional, J. C. Bringham, W. P. Yetts, G. H. S. Millp, R. H. St. B. E. Hughes, G. D. Walsh, A. R. Davidson, E. Kenny, and E. P. G. Causton to the *Pembroke*, additional, L. C. E. Murphy, E. R. Townsend, and A. R. Schofield to the *Wildfire*, additional, all for disposal; and P. D. Ramsay and F. J. Gowans to the *Vivid*, additional, for Plymouth Hospital.

Fleet Surgeon Charles James has been promoted to the rank of Deputy Inspector-General of Hospitals and Fleets (dated Jan. 4th, 1904).

The notice which appeared in the *London Gazette* of March 22nd, relative to the withdrawal from His Majesty's Naval Service of Staff Surgeon Henry Baker Hall is cancelled.

ROYAL NAVAL VOLUNTEER RESERVE.

Fielding Charles Whitmore has been appointed Surgeon (dated March 31st, 1904).

ROYAL ARMY MEDICAL CORPS.

Major H. Carr is transferred from the Poona to the Mhow District. Lieutenant-Colonel J. L. Hall is appointed to the command of the Station Hospital, Quetta. Lieutenant H. H. Kiddle is transferred from the Bombay to the Poona District.

VOLUNTEER CORPS.

Rifle: 4th Volunteer Battalion the Cameronians (Scottish Rifles): Brigade-Surgeon-Lieutenant-Colonel J. Macfie, Senior Medical Officer, Scottish Rifle Volunteer Infantry Brigade, resigns his commission and is granted the honorary rank of Surgeon-Colonel, with permission to wear the prescribed uniform (dated March 26th, 1904). 1st Volunteer Battalion, the Duke of Wellington's (West Riding Regiment): Alfred Thomas Griffiths to be Surgeon-Lieutenant (dated March 26th, 1904). 2nd Volunteer Battalion the Hampshire Regiment: Surgeon-Lieutenant-Colonel R. T. Cæsar resigns his commission and is granted the honorary rank of Surgeon-Colonel, with permission to wear the prescribed uniform (dated March 26th, 1904). 3rd London: Surgeon-Lieutenant T. W. Parry to be Surgeon-Captain (dated March 26th, 1904). 2nd (Renfrewshire) Volunteer Battalion Princess Louise's (Argyll and Sutherland Highlanders): Surgeon Captain H. C. Donald to be Surgeon-Major (dated March 26th, 1904).

ROYAL ARMY MEDICAL CORPS (VOLUNTEERS).

The Aberdeen Company: The undermentioned Lieutenants to be Captains:—W. A. I. Fortescue (dated March 26th, 1904); F. Kelly (dated March 26th, 1904); A. Ogston (dated March 26th, 1904); and T. Fraser (dated March 26th, 1904). The Glasgow Companies: Robert Yuill Anderson to be Lieutenant (dated March 26th, 1904).

VOLUNTEER INFANTRY BRIGADE BEARER COMPANY.

West Yorkshire: Supernumerary Surgeon-Captain G. G. Oakley (Honorary Captain in the Army), from 1st Volunteer Battalion the Duke of Wellington's (West Riding Regiment), to be Captain and to command (dated March 26th, 1904).

THE SIR WILLIAM TAYLOR PRIZE.

The Sir William Taylor Prize of 25 guineas has been awarded to Major M. P. C. Holt, D.S.O., R.A.M.C., in recognition of distinguished professional attainments in surgery as evidenced by the returns of operations performed in Ireland. This prize is awarded annually by Sir William Taylor to the executive officer of the Royal Army Medical Corps on the active list, or on full pay employment below the substantive rank of Colonel, who shall, in the opinion of the committee, be most deserving on account of professional or scientific work.

THE WAR IN THE FAR EAST.

At a special sitting of the Medical Subcommittee held in Moscow on the organisation of the two flying hospitals being furnished at the expense of the local merchants' club it was decided, says the *Novosti*, to exclude entirely the female element from the staff to be attached to them. The horses required (45 in number) for their transport about the fighting zone will be procured in Manchuria.

Dental Surgeon H. C. Toone has been posted to Plymouth and Dental Surgeon A. F. A. Howe to Portsmouth.

Correspondence.

"Audi alteram partem."

THE HOLMAN TESTIMONIAL.

To the Editors of THE LANCET.

SIRS,—As treasurer and secretary of the Holman Testimonial Fund we ask your insertion of this letter and first list of subscribers. It is very rare in our own profession or any other that so consistent a course of public work and effort in the cause of charity can be found. In disregard of personal interest Dr. Holman has for the last 50 years taken more than his share, as a worthy successor to the Martins of Reigate, of the labour of love which builds up our medical charities. As founder and secretary of the South-Eastern branch and as treasurer of the British Medical Association he has advanced the progress of the Association and improved its finances, while as treasurer for 20 years of Epsom College he has fathered it and tided it over many difficulties until it is now recognised as a great public school with a greater future before it. It seems a worthy object to do something to mark time in such a career. In the church of St. Maria Antiqua in the Roman Forum are pictures of popes with square and round nimbi. The square nimbus is the mark of a living pope and such a one would we place on the head of our friend whom we desire to honour while living and we would do so in the manner most congenial to himself in some help to Epsom College associated with his name. We are sure that those most intimate with his work will be our helpers in this aim which we trust will lose no supporters from any inadequacy on the part of its promoters.

We are, Sirs, yours faithfully,

JOHN H. GALTON, M.D. Lond., Treasurer.
W. A. BERRIDGE, Secretary.

Subscriptions of any amount will be received by Dr. John H. Galton, Chunam, Sylvan-road, Norwood, London, S.E.

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THE PAINFUL PRONATION OF CHILDHOOD.

To the Editors of THE LANCET.

SIRS,—In THE LANCET of March 19th, p. 820, a very useful summary is given of a paper by Professor A. Broca on the "painful elbow" or "elbow-sprain" of childhood. He has evidently overlooked an experimental research into this condition published by Mr. J. Hutchinson, jun., in the *Annals of Surgery* for August, 1885, otherwise your transcriber would scarcely have said that "there has been much uncertainty as to the exact lesion present." "The essential feature," writes Mr. Hutchinson, "of these far more common sprains in early life is the upward displacement of the orbicular ligament, to which I have hitherto found no allusion." There is a preparation in the museum of this college, placed there by Mr. Hutchinson in 1885, showing this condition. The fibres which bind the orbicular ligament to the neck of the radius are torn across and part of the orbicular ligament is wedged in between the head of the radius and the capitellum of the humerus. In considering the production of this condition most writers neglect the part played by the supinator brevis in retaining the head of the radius applied to the capitellum.

In young children, when caught suddenly by the hand and lifted, the supinator brevis is caught unawares and the strain, instead of being caught by this and other muscles, is thrown entirely on the ligaments, especially on the orbicular. There is a danger with the great modern rush of medical literature that valuable papers may be buried and forgotten and for that reason I draw attention to Mr. Hutchinson's paper.

I am, Sirs, yours faithfully,

A. KEITH, M.D. Aberd.

London Hospital Medical College, E., March 25th, 1904.

ON THE OPERATIVE TREATMENT OF RENAL HEADACHE.

To the Editors of THE LANCET.

SIRS,—A letter just received prompts me briefly to record its writer's case, which affords a striking instance of how headache of long standing and apparently due to deficient renal excretion may be permanently relieved by operative procedure. The patient is a married woman, aged 37 years. A year ago she had been subject to intense paroxysmal headaches for a number of years. Remedies proved of little or no use and the patient had been in the habit of shutting herself up and seeing no one during the attacks. She had recently had an attack of acute nephritis of the left kidney, with the result that the headaches had become even more frequent and severe. The patient was sent to Montreux to try the effect of change of climate and called on me first on Jan. 6th, 1903, to ask if I thought some other place would suit her better. She was in a condition of evident suffering, her face was drawn and her aspect was despondent. Her pulse was of somewhat high tension and the urine contained a little albumin. The abdomen was distended, the right kidney was in the neighbourhood of the caput coli and was freely moveable, and the left kidney was slightly moveable. After trying a variety of drugs, galvanism, faradism, compresses, and abdominal exercises with little result beyond rendering the abdomen less tense, I persuaded the patient to go into Professor Roux's clinique at Lausanne with a view to having a thorough examination made of the renal excretion.

On Feb. 25th an examination was made with Luys's bi-ureteral collector, a pill of methylene blue having been administered shortly beforehand. The two collecting tubes showed a nearly equal secretion of urine from either kidney, but the fluid from the left kidney was of a somewhat lighter colour than that from the right. A radiogram gave a negative result as regards stone. Thus, the condition of the kidneys was as follows: a highly moveable right kidney and a slightly moveable left kidney; the right kidney was small though healthy as far as could be ascertained by palpation, the left kidney having recently undergone an acute inflammatory process; no calculus was palpable in the right kidney; there was no indication of calculus in the radiogram of the left kidney; the right kidney functionally was more active than the left kidney, as was shown by the differential collector. With these facts before us the question was whether the headaches depended on the condition of the kidneys, if on one kidney more than the other, and on which, and whether operative interference would be likely to afford relief. Professor Roux decided on operating and selected the left kidney on the following grounds: that as a general rule a moveable left kidney produces more definitely marked symptoms than a moveable right kidney; that a kidney which is freely moveable produces less disturbance than a kidney which merely oscillates on its hilus; and that in the present case the left kidney had been recently inflamed and was probably surrounded by adhesions and that possibly it might contain a calculus.

On March 6th Professor Roux cut down on the left kidney, freed it from adhesions, and stitched it in position. From the date of the operation the headache decreased in intensity. On April 6th the patient came to Glion and on May 18th I saw her for the last time and I find the following entry in my notes as to her condition: "Patient looking remarkably well and bright." On March 7th, just one year after the operation, I received a letter from her, from which I give the following extract: "I have not had one bad headache since I came home and everyone here is simply amazed at the change in me."

If I may venture to trace the sequence of events in this case I should suggest that the slightly moveable left kidney gave rise to an irritative perirenal fibrosis resulting in the formation of a fibrous capsule which prevented the distension of the kidney under the influence of functional congestion. Hence defective excretion on the part of the left kidney, while the right kidney being moveable was not in a favourable condition for undergoing vicarious hypertrophy and doing double duty.

Note.—After perusal of this letter Professor Roux writes me that the headaches are perhaps rather to be regarded as part of a generalised nervous disturbance frequently associated with moveable kidney and to which it has hitherto been the custom to attribute certain forms of neurasthenia. Be the mechanism what it may, the fact remains that the treatment was in this case followed by most satisfactory results.

I am, Sirs, yours faithfully,

Montreux, March 10th, 1904. STUART TIDEY.

SULPHONAL POISONING.

To the Editors of THE LANCET.

SIRS,—The following case may interest some of your readers and perhaps they would be able to confirm the diagnosis of sulphonal poisoning from similar cases they may have had. The patient, a colonel in the Royal Army Medical Corps, aged 50 years, while homeward bound from India was suffering from a "cold in the head" and took 20 grains of sulphonal; six or seven hours afterwards he experienced irritation and pain over the ankle joint. This caused him so much discomfort that four hours later he got up and examined his ankle, also noticing irritation at the knee and elbow. He discovered circular patches of erythema, varying in diameter from a quarter of an inch to one inch, over each of the joints above mentioned and also over two metatarsal and two metacarpal joints and one patch on the wrist of the same side. There was some œdema over the ankle, elbow, and metacarpal joints which was confined to the skin only. The redness disappeared on pressure. 30 hours after the irritation was first noticed the patient experienced the sensation of a blister forming, to use his own words, and noticed the exudation of a small quantity of clear serum. He was seen by three or four medical men on board who agreed that it was urticaria and treated him accordingly. I saw him on the third day and noticed two small patches on the abdomen. On the fourth day the patches were less distinct and the irritation was subsiding. I did not see the patient again but he has written saying that it has all disappeared. The patient said that 12 months ago he took 20 grains of sulphonal with a similar but less marked result; it was then put down to the malarial fever from an attack of which he was recovering. He enjoys excellent health, his only trouble being writer's cramp. The peculiarities of the above case are (1) the small amount of sulphonal taken—only one dose; (2) all the patches appeared simultaneously; (3) the position of the patches being, with the exception of two, confined to the neighbourhood of the joints; and (4) the length of time the rash remained, seven or eight days.

I am, Sirs, yours faithfully,

J. L. WHATLEY, M.R.C.S. Eng., L.R.C.P. Lond.

Aston Ingham, Ross-on-Wye, March 29th, 1904.

PNEUMONIA IN EARLY LIFE.

To the Editors of THE LANCET.

SIRS,—The following cases scarcely come under the heading of treatment by opium though minute doses were given in combination with iron. They occurred some years ago and nearly all in the month of March. With one exception they were patients of a Brighton medical charity and were treated at their own homes. All were, except Case 8, treated in the same manner with tincture of iron and tinctura camphoræ composita. In some poultices were applied for a time, followed by the application of camphorated oil, the thorax being then wrapped in wadding. The pallor and depression which pneumonia at times causes in young children have doubtless been often noticed by other observers. The notes are, I regret to say, exceedingly meagre.

CASE 1.—The patient was a boy, aged six years, with pneumonic consolidation of the right lung; the child was very ill. He was treated with tinctura ferri and tinctura camphoræ composita. Recovery ensued.

CASE 2.—The patient was a delicate infant, aged 15

months, with pneumonia of the left lung. There was tenderness on pressure. The child was treated with one minim of tinctura ferri and less than one-minim doses of tinctura camphoræ composita every four hours. Recovery ensued.

CASE 3.—The patient was an infant, aged 11 months, with pneumonia at the base of the right lung. The treatment was: 12 minims of tinctura ferri, ten minims of tinctura camphoræ composita, syrup, and water to one and a half ounces; one-twelfth part to be taken every four hours. Recovery ensued.

CASE 4.—The patient, a child, aged six years, after scarlet fever had apparently taken a chill out of doors. There was some consolidation at the lower part of the right lung. The child was treated with tinctura ferri and tinctura camphoræ composita and recovery followed.

CASE 5.—The patient, a man, aged about 25 years, was found to be suffering from consolidation of the right lung. He had not remained in bed, though feeling ill. He was ordered to bed, treated with friction and with liniment and wadding, which latter he soon discarded on account of its heat. He was given tinctura ferri and tinctura camphoræ composita and some strychnia and made a good recovery.

CASE 6.—The patient was a child, aged two years. This little patient was seriously ill with a temperature of 103° F. There were broncho-pneumonia with diarrhœa, brain symptoms, and a brain cry. The diarrhœa—a sequel to castor oil—was troublesome, requiring bismuth and the discontinuance of the tinctura ferri which had been given with the tinctura camphoræ composita. The case was quite despaired of after a few days by me and also by the district nurse. The diarrhœa, however, ceased, the brain symptoms passed away, and a complete recovery followed. This was the worst case of illness in the series.

CASE 7.—The patient was an infant, aged six or eight weeks. At the second visit I found pneumonia at the base of, I think, the left lung. Treated with tinctura ferri in one-minim doses a good recovery followed within a fortnight.

CASE 8.—The patient, a baby, with pneumonia of the right lung, was treated with salines and small doses of aconite. Recovery ensued.

I am, Sirs, yours faithfully,

Hove, March 28th, 1904. EDGAR DUKE, M.D. Durh.

TRANSPOSITION OF THE VISCERA.

To the Editors of THE LANCET.

SIRS,—A very remarkable case of this rare condition, which I consider worth communicating, has come within my experience. On March 22nd I was called to attend a sailor who had fallen into the hold of a ship called the *Kate Thomas*, lying in dock in this port. I found the man suffering from a severe sprain of the left hip-joint. In a general examination for other possible injuries I was astonished to find his heart, liver, and spleen situated abnormally as regards the mesial line. His heart was on the right of the mesial line and its apex beat could be seen one and a half inches below and a half-inch to the left of the right nipple. The second sound could be best heard in the first right intercostal space half an inch from the sternum. The liver was transposed to the left and the hepatic dulness, though embracing a field of normal extent, was wholly transposed. The spleen could be felt on the right side. The man, whose name is Johan Heidenreich, is a Hollander, aged 41 years. He informed me that in 1880 he went to Amsterdam with the intention of entering the navy. The medical examiners, Dr. Zegars and Dr. Bienendyk, were surprised to find the viscera transposed and though the would-be recruit was quite healthy and sound they could not, in view of his abnormality, allow him to pass. When Heidenreich's physical peculiarity became known in Amsterdam it attracted much attention, an examination being made by Professor Stockfish and nearly a hundred other medical men. A petition was sent to the King praying that Heidenreich might be permitted to join the navy, but apparently the King could not see his way to over-rule the objection of the naval medical examiners, although Heidenreich's visceral abnormalities were not looked upon as in any way detrimental to his health. The late Dr. Delanus, in a clinic relative to Heidenreich's case, said that he had never seen, nor had he ever met anyone who had seen, such a case, but he believed that in the year he was born—1800—one was recorded in Vienna. Having been rejected by the navy Heidenreich tried for the army but was again rejected on the same grounds. Since 1882 he has been at sea, has sailed to all parts of the world, and was once shipwrecked in the Mediterranean. He has never been ill. He informs me that the Dutch and German journals devoted a good deal of space to his case.

I am, Sirs, yours faithfully,

WILLIAM HARTLAND.

Port Talbot, South Wales, March 29th, 1904.

ECLAMPSIA AND CHLOROFORM.

To the Editors of THE LANCET.

SIRS,—The case mentioned by Dr. J. F. Jennings in THE LANCET of March 19th, p. 793, brings to my mind a similar case to which I was called by a neighbouring practitioner about 22 years ago. The patient was a primipara, about 25 years of age. She had severe fits every few minutes. Labour had commenced, the os being dilated to the size of a five-shilling piece. I suggested the immediate administration of chloroform and the patient was kept under its influence until delivery was effected which was assisted by digital dilatation of the os and then the use of the forceps, and in about an hour the case was terminated, the fits ceasing in the course of another hour. The urine was highly albuminous. The effect of the chloroform was so gratifying that I should always do the same again in a similar case and not waste any time in trying other remedies. I have no notes of the case.—I am, Sirs yours faithfully,

Bristol, March 30th, 1904. A. H. HAINES, M.R.C.S. Eng.

NOTES FROM INDIA.

(FROM OUR SPECIAL CORRESPONDENT.)

Another Indian Municipality warned by Government for Neglect in Sanitary Matters.—Disposal of Contents of Septic Tanks.—Increase in the Plague Mortality.—Quarantine for Indian Pilgrims to Mecca.—A Nursing Institute for Madras City.

I HAVE had from time to time to point to the serious shortcomings of Indian municipalities, more especially with regard to sanitary matters, and in some instances the neglect has been so flagrant that the Government has been compelled to deprive the defaulting bodies of their powers. An order has recently been passed by the Government of Madras against the Kumbakonam municipality. In financial matters great defects have been reported but in the sanitary department it appears that the chairman of this municipality "has given no attention to the supervision of the work of the chief sanitary inspector and his department, and that sanitary duties are neglected, filth is allowed to be deposited all over the town, persons committing nuisances are seldom prosecuted, the markets are in a disgraceful state, the private scavenging service is not progressing, there is no separate night-soil depôt, and the number of latrines and night-soil carts is insufficient for the needs of the population." In ten years the sanitation of this important town has been practically stationary, notwithstanding repeated recommendations by the sanitary officers, and no provision appears to have been made for carrying out any of the recommendations by the council in its annual budgets. The vital statistics of the town are reported as untrustworthy and there is no supervision over the work of the vaccinators. Notwithstanding neglect in every branch of the administration the Government is merely giving the council a warning and will allow the same body to continue in office for the present year. At this rate little progress will be made and I have no hesitation in saying that the council should be at once dissolved and the necessary powers for administration placed in other hands.

I regret to hear that the Lieutenant-Governor of Bengal has listened to the prayer of the Hindu community and has directed the discontinuance of the practice of discharging the contents of the septic tanks installed at a sparsely inhabited part of the river Hooghly several miles up from Calcutta. Considering that the river is extensively used as a latrine all along its banks and that drainings into it of all sorts of filthy matters is not prohibited the decision in this

particular case is apparently intended to meet the sentimental wishes of a particular community. The disposal of sewage is a difficult one in India altogether and "throw backs" of this kind must be very disheartening to the promoters.

The plague mortality throughout India is steadily rising. For the week ending March 5th 28,919 deaths were recorded, as against 27,858 for the previous seven days and 29,648 for the corresponding week of 1903. The disease is increasing in the United Provinces, the Punjab, Bengal, and the Central Provinces. The detailed figures are: Bombay Presidency, 6442 deaths; United Provinces, 6910; Punjab, 5550; Central Provinces, 2040; Bengal, 3305; Bombay city, 964; Calcutta, 174; Karachi, 81; Madras Presidency, 674; Mysore State, 388; Hyderabad State, 813; Central India, 756; Rajputana, 427; and Kashmir, 395.

There appears to be ten days' quarantine at Camaran Island for Indian Mahomedan pilgrims to Mecca, notwithstanding that these pilgrims have already spent 15 days on board and the ship is classed as "healthy." The Turkish Government is to be asked to modify these hardships and to exempt the pilgrims from further quarantine provided the ship be passed as "healthy." An important point is that these pilgrim ships do not touch any intervening ports.

A scheme is on foot to revive the Madras Nursing Institute. The supply of trained nurses is now so uncertain that something in this direction must be done. A conference of senior medical officials and private practitioners in Madras was recently held and it was resolved to found an institute with an English-trained matron-superintendent and several locally trained nurses under her from which nurses can be supplied to up-country stations at reasonable rates. Considering that some of the railways have their staff of trained nurses Madras must be very behindhand. I understand that the Bengal-Nagpur Railway has English-trained nurses for the officials on the various sections of its line and there is the organisation started by Lady Curzon for the better supply of trained nurses at other than hospital towns and in the chief up-country stations.

March 19th.

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

Death of Councillor R. W. Haines, M.R.C.S. Eng., L.S.A.

I MUCH regret to have to chronicle the sudden death of Mr. R. W. Haines, a highly respected member of the medical profession whose genial personality will be much missed in Birmingham and particularly in Balsall Heath, a suburb which he has represented upon the city council ever since it has been included within the city boundaries. Mr. Haines, who was one of the oldest practitioners in the city, was born at Bromsgrove and educated at the school in that town. He pursued his medical studies at King's College, London, and after qualifying came to Birmingham some 36 years ago and settled down in Balsall Heath. He always took a deep interest in public affairs and was a member of the local board of Balsall Heath while that district was still separate from the city. About 12 years ago it became included within the boundaries and Mr. Haines was elected one of its representatives on the city council. He was made a member of the free libraries committee and for some time was its chairman. In the work of this committee he always displayed a deep interest and in fact attended a meeting of one of its subcommittees the day before his death. He was also a member of the lunatic asylums committee and for two years was chairman of the Winson Green subcommittee. At recent meetings of both the above committees and of the city council resolutions of sympathy and condolence have been passed. Mr. Haines, who was in his sixty-first year, was suddenly seized with an attack of angina pectoris to which he succumbed in three hours.

The Dean of Worcester and Vivisection.

In my last letter but one I mentioned that at a meeting of the local branch of the Society for the Prevention of Cruelty to Animals, of which he was president, the Dean of Worcester made some remarks in favour of vivisection which were not received with general satisfaction. As a consequence the Dean stated that if his views were not in harmony with those of the members of the branch he should resign his position in connexion with it. Since this letter it appears that so much adverse comment has been made that the Dean has carried out his threat and resigned the presidency of the branch. At a meeting of the Worcester Medical Society the following motion was passed:—

> This meeting has much pleasure in learning that the Dean of Worcester is able to distinguish between the experiments made on animals for scientific purposes and cruelty to animals and begs to congratulate him on his action in severing his connexion with the Worcester Society for the Prevention of Cruelty to Animals, which appears unable to do so.

The Dean has expressed his thanks for, and gratification at, the resolution above quoted and in his reply states that a paragraph in the society's report had led him to believe that it had no objection to vivisection when conducted properly. It is much to be regretted that a society which does, and has done, so much really valuable work should mix itself up with an antivivisectionist propaganda which cannot be approved of by its more thoughtful and better-informed supporters.

Care of the Feeble-minded.

For a number of years the Birmingham education authority, whether school board or city council, has taken much interest in the subject of the care of feeble-minded children and recently the matter has been very much pushed to the front by the energetic action of Mrs. Hume C. Pinsent who is chairman of the subcommittee of the education committee charged with the care of the schools frequented by these unhappy children. A conference of the after-care committees of this city and of Leicester and Nottingham has recently been held in Birmingham and a large number of representatives of boards of guardians and education committees were present. The Lord Mayor, in welcoming the members of the conference to the Council House, where the meeting was held, said that he was glad that Birmingham should have been chosen for a conference of such national importance. Hitherto this vast subject had only been in the hands of those who had seen the great danger to the community generally by allowing feeble-minded members of society to go about in an untrained condition. These unfortunate people often fell victims to the evil-minded. Now that the town councils had undertaken educational work he hoped this matter would receive their attention. He knew it would be a surprise to many when they were asked to provide for the permanent care of the feeble-minded. As a matter of fact, these were already being accommodated in special schools, but after being kept there at great expense to the age of 16 years they were allowed to go adrift, many to make their reappearance in crime. In this way they really cost the public more than if permanent control had been taken of them. In the absence of Miss Dendy, secretary of the Lancashire and Cheshire Society for the Permanent Care of the Feeble-minded, a paper by that lady was read by Mrs. Pinsent. A child of low mental capacity but well trained, said the writer, would generally present a more favourable impression than one of higher intellect who had been neglected and thus it would be necessary for a careful medical examination to be made before admitting to a permanent home. In Manchester a school for the care of the mentally deficient had been established, but though of a voluntary nature it was in touch with the education authority. There was danger, she argued, in teaching children to earn their own living, for if they were allowed to go out into the world it increased the probability of their taking upon themselves the responsibilities of parenthood. This was one of the things to be guarded against, as the majority of feeble-minded cases were the result of some hereditary trouble. Unfortunately there was no power by which parents could be made to part with feeble-minded children and she contended that the Act of 1899 dealing with the control of imbeciles should be made compulsory instead of permissive. To her mind it was absolute cruelty to train children to the age of 16 years and then to turn them adrift to look out for themselves. What was necessary was that permanent residential homes should be provided. All they asked in connexion with the cost was that it should be borne equitably by the community instead of, as now, by only a section of it. Although there was little hope for the cure of the feeble-minded, if kept from danger they undoubtedly improved both mentally and morally, and being so safeguarded inflicted no hardship upon them. On behalf of the Birmingham education committee its chairman, Councillor G. H. Kenrick, welcomed the conference at its

sitting in the afternoon. He urged them not to attempt to force legislation. In order to make legislation speedy it would be necessary to bring before the public such a multitude of facts that they would be convinced of its desirability and would not set up any hostile demonstration. Mr. W. H. Dickenson urged that the first care should be to stop the propagation of feeble-minded offspring. Dr. W. A. Potts, chairman of the Birmingham after-care sub-committee, described feeble-mindedness as a preventable disease and mentioned as the principal causes heredity, insufficient nourishment in childhood, criminal parentage, and chronic alcoholism of parents. Dr. S. H. Perry, alluding to the lack of nutrition in early life as a cause, contended that the municipality should supply sterilised milk as infants' food to poor people at less than cost price. A half-penny rate, bringing in £6000, would provide for this and minimise the evil to a remarkable degree. A plea for better accommodation for non-pauper imbeciles was made by Mrs. Pinsent. She said that paupers were provided for and so should be the imbecile children of the working classes. Parents, to whom the idea of the workhouse was repulsive, would contribute towards the cost of maintaining their children. At the close of the conference resolutions were passed in favour of making compulsory the Elementary Education of Defective and Epileptic Children Act of 1899; that an inquiry should be held to consider the advisability of confining pauper and non-pauper imbeciles in suitable establishments on a different certificate from that now required; and that boards of guardians should receive 4*s.* per week for every harmless lunatic confined in homes provided by them to the satisfaction of the Local Government Board. The same subject was also brought before the recent meeting of the Birmingham Society for Promoting the Election of Women Guardians by Mrs. Pinsent, who strongly urged that the permanent care of the feeble-minded and epileptics should be in the hands of boards of guardians and not of city councils. I observe that Dr. Potts has been reading a paper on the same subject before the members of the Sanitary Institute in London. Dr. Potts detailed some facts learnt by him in Birmingham and stated that out of 46 cases on the list of his committee 18 were earning wages varying from 2*s.* to 12*s.* per week, the average wage per week being 7*s.* 1*d.*, so that these people were adding a really valuable sum to the weekly budget of the family. Ten out of these 18 were never likely to become permanently self-supporting and 23 out of the 46 cases should be segregated in a permanent home. Dr. Potts also stated that he had recently visited a number of charitable homes around Birmingham and examined 862 children. He found that 94 of these were so far mentally deficient as to require permanent care. Dr. Potts also stated that he had generally found that one or both of the parents of feeble-minded children were drunken. He urged the necessity of preventing marriage among the feeble-minded.

April 4th.

MANCHESTER.

(FROM OUR OWN CORRESPONDENT.)

The Hospital for Consumptives.

THE annual meeting of the friends and supporters of the Manchester Hospital for Consumption and Diseases of the Throat and Chest was held on March 23rd. The report told of increased work both at Bowdon, where the in-patients are treated, and at Hardman-street, where the out-patients attend. There was a deficit of £536 on the year's working. The Crossley Sanatorium at Delamere is not likely to be ready for patients till towards the end of the year. It may be remembered that Mr. W. J. Crossley is building this at a cost of between £70,000 and £80,000, but an endowment fund of £100,000 is needed for its maintenance, towards which £56,417 have been obtained. The chairman, Mr. W. J. Crossley, expressed his sorrow that consumption did not seem to be decreasing. It was estimated that there were 160,000 consumptives in the country and, so far as he knew, only about 60 sanatoriums, with about 2000 beds, and these almost entirely for rich people who could pay four or five guineas a week. He hoped county councils would quickly obtain and use powers for erecting sanatoriums, though he did not know that any had as yet done so. The Manchester Hospital had large numbers waiting for admission and while waiting their chances of recovery became less. He spoke of the danger of relapse when patients returned to "their old surroundings, the old infected dwellings, and suffered from want of food." Nearly 50 per cent. relapsed. Dr. J. Niven, medical officer of health, referred to the efforts of the corporation to prevent consumption by issuing instructions as to how to avoid the disease and by sending medical officers to visit the homes of the people. But in many of the wretched homes the instructions could not be carried out and the help of hospital treatment was necessary. He thought that the public, through the municipalities, should take up the question of providing hospital treatment for poor people.

Presentation of Address to Dr. A. Hodgkinson.

Before the close of the annual meeting of the friends of the Hospital for Consumptives a framed illuminated address was exhibited which the board of management and the medical board will present to Dr. A. Hodgkinson, the senior physician, on his retirement under the age limit rule. In association with the late Dr. Shepherd Fletcher he founded the hospital in 1875 and the address referred to his devoted services to the institution. The chairman said he would remain connected with the hospital as honorary consulting physician. Dr. Hodgkinson was unavoidably absent but the address will be formally presented by the chairman.

Manchester Infirmary Board.

Mr. W. Cobbett has been elected chairman of the infirmary board and there is no doubt that he will prove an efficient successor to the late Mr. John Thomson. He presided at the meeting of the board on March 28th, when it was reported that the plans of the proposed new infirmary buildings at Stanley Grove had been referred to the building committee with an instruction to ascertain to what extent economies can be effected. A resolution of sympathy with the relatives of the late Dr. F. Renaud was passed.

Exhuming a Body.

On March 26th an advertisement appeared in the Cheshire county newspapers of an unusual character. It was in the form of an apology from the Northwich burial board for removing a dead body from Lostock Gralam burial ground and undertaking to pay the costs of an action commenced in the King's Bench Division. It seems that there was a dispute with the Lostock burial trustees as to the position for a monument over the grave of the daughter of a parishioner. An order of exhumation was obtained from the Home Secretary. The burial board sent men "at the dead of night" who took the body from the grave and buried it again in the burial board's unconsecrated ground two miles away. This remarkable and most objectionable proceeding the board said was covered by the Home Office order but this was found to be an error. The diocesan authorities said that a faculty should have been obtained and that the Home Secretary had expressed personal regret that a licence was granted. This high-handed proceeding on the part of the burial board led to a writ being served on the board, which was followed by the board giving way, making a public apology, and settling the action commenced against it by paying the plaintiff's costs. One feels some regret that the members of the board instead of the all-suffering ratepayers have not to bear the expenses entailed. There is a strong feeling that graves should be respected as sacred even by burial boards.

The Levenshulme Anthrax Case.

Reverting to the case of anthrax which was mentioned in THE LANCET of March 12th, p. 760, it may be remembered that the farmer who sold the heifer left the infirmary while waiting to be conveyed to the Monsall Hospital. He went home and died in a day or two. The young man, Cresswell, who dressed the carcass for the Levenshulme butcher was taken ill and brought back from Sandbach and admitted to the Monsall Hospital, where he is said to be recovering. On March 22nd the butcher was summoned before the magistrates. The facts of the case were as follows. The heifer was on the farm of Pimlott, the owner, and on Feb. 23rd was observed to be ill. Next day some medicine was given to it but it did not improve and about mid-day Pimlott bled it to death when it was in a dying condition. Clarke, the butcher, sent Cresswell to dress it and he called Clarke's attention to the spleen which was enlarged. Notwithstanding this he bought the carcass, paying a low price. Professor S. Delépine certified Pimlott's case as one of anthrax and

steps were taken to isolate the farm. The inspector ascertained from Clarke that the whole of the beast was sold except the tongue which was in pickle. The tongue, with other tongues and meat in contact with it, was seized and handed to Professor Delépine. His report was to the effect that he microscopically examined various parts of the seven tongues and found that one (numbered 691) was from an animal that had died from anthrax or had been killed in the last stage of the disease. Anthrax bacilli were found still living and capable of rapid growth, were still virulent and capable of infecting animals. The defendant and his family, the solicitor stated, had partaken of the meat but neither they nor their customers, so far as was known, had suffered in the slightest degree. In answer to Mr. Yates, the stipendiary, Professor Delépine said there was usually no great danger from eating the flesh of an animal which had died from anthrax provided that the flesh was cooked. The danger arose when the flesh was not cooked before eating or was handled by persons with wounds on their hands. The defendant was fined £10 and costs and on the application of the prosecution £3 3s extra costs were allowed. It is clear that he was culpably careless but without putting him into that class it is to be feared that the race of slink butchers, whose business consists in dressing up diseased meat for sale, is by no means extinct.

April 5th.

WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

"*The Treherbert and District Medical Attendance Society.*"

THROUGH the death of Mr. E. S. Warburton, who was surgeon to the Treherbert collieries in the Rhondda Valley, a vacancy has occurred in the position which he had held for many years and an alteration is to be made in the relations previously existing between the colliers and their medical officer. At all the collieries in the great Rhondda Valley the sum of 3*d*. in the £ is deducted from the colliers' wages by the managers and is paid over to the colliery surgeon who provides all the necessary medical assistance and pays the expenses of the practice, taking all the risk of the collieries working short time or being entirely closed, as many were during the five months' strike of 1898, when, as there was no money being earned by the men, there was no poundage for the surgeons, although there was no intermission in the medical attendance upon the colliers and their families. The Treherbert colliers have decided to give up this arrangement which has worked well for many years and have established the "Treherbert and District Medical Attendance Society," the object and rules of which follow very closely on the lines of a medical aid society and contain some of the objectionable features of the latter. It is proposed to appoint a "head doctor" at a salary of £450 per annum and one or more assistants at a salary of £200 per annum, each to pay his own rent and household expenses. The society will provide and pay for a groom, horse, and conveyance and will also provide and maintain surgeries and pay for all drugs and instruments required. The number of medical assistants is to be increased or reduced proportionately with the variation in the number of members in the society, but whether the "head doctor" or the society is to decide the need for additional assistance is not stated. Any person may become a member of the society who is employed in the collieries or other public industries in the district and who contributes to the funds 1¼ per cent. of his earnings, an amount, it will be observed, equal to the 3*d*. in the £ formerly deducted in the colliery offices. Among the objectionable features already referred to is the admission to membership of the society of business and professional persons who contribute such a sum as may be determined by the committee but not less than 3*d*. weekly. No wage limit is fixed and the surgeon would not in any way benefit by increased contributions demanded from well-to-do tradespeople or professional persons. The single contribution either from the colliers or other members, it should be stated, entitles not only the head of the household but also his dependents to medical and surgical attendance. As it is not proposed that the colliers' contributions should be less than formerly it is difficult to understand what they are to gain by the alteration. They are promised that if the funds allow a nurses' institute shall be established and that the moneys of the society shall be applied for the medical benefit of the members in any form approved of by a general meeting. The president, treasurer, secretary, and three trustees of the society are to be paid for their services such remuneration as the committee, of which they are members, shall decide, and as it will no doubt be the duty of one of these officers to collect each month the contributions of the members it is obvious that the management expenses will not be small. One objection to the new scheme from the medical practitioners' point of view is that money contributed by the men expressly for medical attendance may be used to pay lay officials and, further, that the reputation of the surgeon may be used by the society to obtain increased monthly contributions from employés in private establishments or from business or professional persons; he may indeed be exploited by the society entirely for its own benefit. The disadvantage to the colliers will be that they will not be able to secure the services, or at any rate the continued services, of surgeons with reputations equal to those of the gentlemen now practising in the Rhondda Valley. Most of these practitioners have been in the district for many years and they all have a distinct influence on the social life of the valley, but it is quite certain that there is not one of them who would have been satisfied for long with the exacting duties of a colliery practice on a yearly income of £450 in a district, moreover, where house rents are high and living is costly.

Prevention of Small-pox—Bristol Methods v. Leicester Methods.

At a meeting of the Bristol health committee held on March 17th during a discussion arising out of a communication received from the Imperial Vaccination League a member of the committee took occasion to compare the sanitary condition of Bristol with that of Leicester to the detriment of the former city and stated that Leicester was quite at the top of the tree as regards health. In January of last year this same gentleman persuaded the health committee to send through the town clerk a letter asking the Leicester authorities for details of their method of dealing with cases of small-pox. As at that time there were some 20 cases of the disease occurring weekly in Leicester the town clerk of that town no doubt thought he was being "chaffed" and made no response. The medical officer of health of Bristol (Dr. D. S. Davies) in a very exhaustive letter to the local newspapers has shown that however high Leicester may be in the sanitary scale Bristol is still higher if judged by certain standards. For example, in the ten years 1893-1902 the average yearly infantile mortality-rate in Bristol was 146 and in Leicester 191 and during the same period the average annual diarrhœa death-rate in Bristol was 0·67 per 1000 and in Leicester 1·53 per 1000. Dr. Davies's comparison of the behaviour of small-pox in Bristol and in Leicester during the early months of 1903 is very striking. He says: "In the first six months of 1903 small-pox was introduced into Bristol on 16 occasions—that is, on an average oftener than once every fortnight—but was kept under absolute control by common-sense methods which I need not detail and only caused three deaths. In Leicester during the same period under the operation of the 'Leicester method' small-pox assumed epidemic spread and caused more than 300 cases and 21 deaths—i.e., seven times as many deaths as in Bristol, although Leicester is a comparatively small town of 220,272 persons."

Cruelty to a Cow.

A cattle dealer was recently fined 40*s*. by the Neath magistrates for peculiarly gross cruelty to a cow. In order it is said that the cow might present a good udder in the market on the following day the dealer placed a rubber ring on each teat. A police constable found the animal groaning and evidently in great pain which was at once relieved upon the rings being removed and the milk drawn off.

Vagrancy in Glamorganshire.

The Bridgend board of guardians recently invited other boards in Glamorganshire to confer as to the best means of dealing with the increase of vagrancy in the county. A meeting of members of the boards was held on March 31st when a motion was passed urging the President of the Local Government Board to give speedy effect to his promise to hold an inquiry into the question of vagrancy, having regard especially to labour colonies and child vagrancy. A suggestion that a labour colony on the lines of the Salvation

Army colony in Essex should be established in the county met with some sympathy but no definite steps were taken in this direction.

Assaults upon Children.

The large number of young men in the colliery districts who lodge in the houses of their married fellow workmen no doubt partially accounts for the prevalence of offences against young children which is a deplorable feature of crime in Glamorganshire. At the last Cardiff Assizes Mr. Justice Walton in sentencing a youth to 18 years' penal servitude for brutally assaulting a little girl said: "If you had not been protected at all it seems to me that you, or any man guilty of such an offence, would be torn to pieces by his fellow creatures, but whilst the law does not allow the friends of those who are outraged in this manner to take their own revenge the law must inflict adequate punishment."

University College, Bristol.

An amateur performance of *The Schoolmistress* is announced to take place at the Victoria Rooms, Clifton, on April 29th and 30th. The performances, which will be under the direction of Dr. D. S Davies, are in aid of the funds to acquire an athletic ground for the students of University College, Bristol.

April 4th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Dispensary Medical Officers.

At a meeting of the Banbridge board of guardians held on April 4th a letter was received from Mr. Robert Martin inclosing a list of dispensary tickets for the consideration of the board as the persons to whom they were issued were in no way entitled to the benefits of the Irish Medical Charities Acts. In one case the relatives of the recipient are rated occupiers to the amount of almost £30 and in another case the ticket-holder occupies between four and five acres of land. The guardians cancelled two of the three tickets, holding the third over for further consideration.

Irish University Education and the Cork Queen's College.

The city of Cork grand jury, consisting of some of the most representative gentlemen of the city and county, unanimously adopted the following motion recently:—

That we, the grand jurors of the City of Cork assembled at the Spring Assizes of 1904, are strongly of opinion that the intellectual and material interests of the city demand that Cork shall continue to be a university centre; that the more highly trained the intelligence of a community the better fitted that community is to participate in the administration of justice; that as there is at present such keen competition in trade and commerce it is an absolute necessity that the citizens of Cork should have ample facilities for obtaining the highest intellectual training, in order that they may be in a position to successfully compete with the various commercial nations of the world.

The foreman having read the resolution for the presiding judge, the Lord Chief Justice of Ireland, his lordship stated he could not accept the resolution as it was outside the sphere of his duties and in the course of his remarks said, "they all knew how much he appreciated the intellect of Cork and the general ability of the citizens of Cork." He also added that "he appreciated and, if he might say so, agreed with the abstract considerations that were involved in the resolution."

Death of Mr. Hamilton Ross, M.D. Edin.

I regret to announce the death of Dr. H. Ross at his residence, Ballynacree House, Ballymoney. He was a county Antrim man, born in 1829, the youngest son of the late Mr. John Ross of Drumagrove, Clough, Co. Antrim. Educated at the Royal Academical Institution, Belfast, he proceeded to the University of Edinburgh, where in 1855 he graduated M.D. He was also M.R.C.S. Eng. In 1854 he entered the Indian Medical Service in which he rose to a high position, being in turn physician to the Maharajah of Travancore and head of the medical service of that State and afterwards inspector general of prisons in Burmah. He subsequently retired and lived near Ballymoney, Co. Antrim. He married the eldest daughter of the late Judge Cook and has left one son (Dr. J. R. H. Ross) and five daughters. His death is deeply regretted by a large circle of friends.

April 5th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Infant Life Protection in a Small French Commune.

AT the meeting of the Academy of Medicine which was held on March 15th an account was laid before the meeting dealing with a letter addressed to the Academy by M. Morel who is mayor of the commune of Villiers-le-Duc (Côte d'Or). M. Morel set out the results which he has obtained during a consecutive series of ten years in his commune by the application of a few simple measures for the protection of infant life. The result is that the infantile mortality which at the beginning of the nineteenth century was 29 per cent. has within the last ten years in the commune in question practically fallen to nothing. The means adopted are as follows. Every necessitous pregnant woman who notifies her pregnancy at the seventh month at the Mairie is helped by the commune which provides her with a midwife and, if need be, with a medical man. After her confinement she receives one franc a day for ten days if she remains in bed. Every woman who has the care of a child is obliged to possess a sterilising apparatus if she does not suckle the child herself. All infants must be inspected every fortnight either at home or at the Mairie. In case of any infant being taken ill the fact must be notified at the Mairie within 24 hours. Finally, every mother or foster-mother who can exhibit her nursling in good health at the end of one year is given two francs for every month during which she has had the child under care. It is much to be hoped that the example of M. Morel will be followed by the mayors of many other communes.

A New Parasite.

At the meeting of the Academy of Medicine held on March 22nd M. Laveran reminded the members that on Nov. 3rd, 1903, he had shown specimens of a new parasite discovered in the Indies in the spleens of those patients who were suffering from an ill-defined form of fever (*fièvre irrégulière*). M. Laveran and M. Mesnil had described this parasite under the name of piroplasma Donovani. Now an army surgeon in Tunisia, M. Cathoire, has just sent to M. Laveran some scrapings from the spleen of an infant aged seven months which contained an abundance of parasites exactly similar to the piroplasma Donovani. M. Cathoire, who made a post-mortem examination of the body seven hours after death, stated that the spleen was 12 centimetres long by six and a half centimetres in width—i.e., it was much hypertrophied. These scrapings when stained by Laveran's method (blue with oxide of silver, eosine, and tannin) showed the parasites as oval or round elements, generally single, measuring from 2μ to 3μ in diameter. The protoplasm stained very slightly but there could be seen in the interior of each element a principal karyosoma which was round and an accessory karyosoma which was either round or staff-shaped and which stained better than the principal karyosoma. These karyosomata were sometimes in a state of division and M. Cathoire found in the general circulation bodies very similar to those found in the spleen. M. Cathoire's discovery is of great interest and it is to be hoped that medical men practising in Algeria and Tunisia will keep a look-out for cases of this disease and will collect information about its frequency and its clinical manifestations. Parasitic elements analogous to the piroplasma Donovani have been described as existing in the "buttons" which are endemic in certain hot countries—e.g., Aleppo button—and research might well be made into the question of the relationship, if any, which may exist between these "buttons" and the general manifestation of the parasite which has been observed in the Indies and by M. Cathoire in Tunisia.

Statistics of the Pasteur Hospital.

At the meeting of the Hospitals Medical Society held on March 18th M. Martin communicated the following figures from the Pasteur Hospital. From Oct. 1st, 1900, to April 19th, 1903, there were 2000 patients treated at the hospital with 189 deaths, or a mortality of 9 45 per cent. Cases of small-pox numbered 524, with 96 deaths; of diphtheria 443, with 50 deaths; of measles 126, with two deaths; of scarlet fever 92, with two deaths; of erysipelas 163, with 11 deaths; of non-diphtheritic sore-throat 163, with three deaths; of suppurating glands 20, with no deaths; of hydrophobia 7, with 7 deaths; of chicken-pox 55, with 1

death; and of other diseases 179, with 17 deaths. There were 192 patients who were either mothers of sick children or children of sick mothers and among these there were no deaths. Finally there were 26 patients treated with anti-rabic antitoxin as a preventive and seven treated with anti-diphtheritic serum as a preventive, with no deaths in either series.

A Case of Poisoning.

The Correctional Tribunal of Havre has just given judgment in a case of homicide by imprudence for which a hospital physician and the hospital dispenser were prosecuted. A child, aged six years, was given an injection of cocaine of a strength of 1 in 50 instead of 1 in 500 and died within a few minutes. The physician was fined 200 francs with a stay of execution. The dispenser was acquitted. The court held that the medical man had been imprudent in not himself verifying the solution and in allowing the syringe to be got ready by a porter and that he alone was responsible. The dispenser received the benefit of the doubt for the prescription could not be found and so its exact text could not be put in evidence.

April 5th.

NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

Diphtheria on a Naval Vessel.

A VERY instructive instance of diphtheria occurring on board a naval vessel and its destructive effects before its nature was recognised is reported. The ship was the United States cruiser *Buffalo* which arrived at New York in October, 1902. Without being disinfected she proceeded to the Norfolk navy yard where she received on board 450 landsmen for training, making with her regular crew a total ship's company of about 750 men. During her stay of 44 days at Norfolk 38 cases of epidemic catarrh were treated and five cases of sore-throat. She left for New York and thence sailed to the West Indies on Dec. 12th; meantime ten cases of sore-throat appeared. Subsequently other cases occurred with severe general symptoms and swelling of the cervical lymphatics. On Dec. 22nd two cases appeared which were evidently of a more malignant character, one of which was fatal. The vessel arrived at Pensacola on Dec. 30th, having had 42 cases of so-called tonsillitis and eight of diphtheria admitted to the sick list. 48 cases were transferred to the naval hospital where bacteriological examinations revealed the true nature of the disease. The ship then went to Port Royal and on Jan. 22nd, 1903, she was vacated and thoroughly disinfected. On Feb. 2nd 206 men returned to the ship, the others remaining in hospital, among whom the disease continued to appear. On Feb. 17th the services of a bacteriologist were secured and the isolation of all having bacilli in the throat was rigidly enforced. This practice put an end to the epidemic. The total number of cases was 137. It thus appears that for nearly three months epidemic diphtheria prevailed in this small community, during which time the preventive measures which are recognised as most efficient were not employed. The lesson which this event teaches is of general usefulness but its special application to the medical department of the navy must be fully appreciated.

Candidates for the Public Health and Marine Hospital Service.

Very great importance is now attached to the qualifications of candidates for the positions in this comparatively new department of the general Government. Formerly the service was confined chiefly to the care of sailors sick in the ports of the country, but the recent legislation which placed this service at the head of our national public health system has added the whole realm of public hygiene, national and international. These positions have therefore become of vastly greater importance in the public estimation and the greatest care is taken in the selection of the officers to fill these places. From the announcement of examinations about to be held it appears that candidates must be of a high grade of education and character as certified by competent authority. The immediate examination for the service is of the most rigid and exhaustive character, covering the field of primary education, medicine and surgery, and, finally, the whole scope of hygiene, municipal, State, national, and international. These positions are now regarded by the highest grade of medical graduates as well worthy of their ambition. The tenure of office is permanent. The rate of pay is as follows: assistant surgeons, $1600; passed assistant surgeons, $2000; surgeons, $2500; commutation at the rate of from $30 to $50. All grades above that of assistant surgeon receive longevity pay, 10 per cent. in addition to the regular salary for every five years of service up to 40 per cent. after 20 years' service.

The National Legislative Council.

The organisation of a National Legislative Council by the American Medical Association was designed to provide a commission, representing the medical profession, that shall have supervision of all measures relating to the Army, Navy, and Public Health and Marine Hospital Service that come before Congress. A meeting of this council has recently been held at Washington and a large number of measures were brought forward for its action. Some of the more important are of general interest. An effort is being made by the Public Health and Marine Hospital Service to increase the capacity of its hygienic laboratory and an appropriation was secured to erect suitable buildings. These buildings have been erected and, moreover, the scope of laboratory work has been greatly extended by the addition of three new branches—viz., medical zoology, pharmacology, and chemistry. The council approved of the necessary legislation to carry this scheme into effect. The council also approved of a measure for establishing a corps of dentists and for organising a corps of trained nurses in the United States navy. The council took action to have the Public Health and Marine Hospital Service empowered to prepare and to maintain a standard of antitoxin for determining the strength of antidiphtheritic serum and recommended that anti-diphtheritic serum should be introduced into the United States Pharmacopœia and that the standard prepared by the Public Health and Marine Hospital Service should be made officinal.

The New Mount Sinai Hospital of New York.

The opening of this hospital for inspection by the public is the popular event of the day. Upwards of 25,000 people passed through the buildings in the two days of exhibition. Judging it both in detail and as a whole it is undoubtedly the most perfect hospital construction in this country. The Jewish charities of this city are of the highest grade of excellence in construction, maintenance, and management. But in the lavish expenditure of money, to secure perfection of detail in even the most minute and unimportant features of construction work, the New Mount Sinai Hospital far excels any similar institution among us. This hospital was originally located at Madison-avenue and Sixty-eighth-street where it had a long and honourable career. The new hospital is located at Fifth-avenue and One Hundred and First-street and occupies a block having a large exposure upon Central Park. The entire cost of the hospital is upwards of $3,000,000. The general arrangement of the buildings gives a central administrative building, with its offices and residential apartments for the staff of officers: on one side is a building for surgical cases and on the other a building for medical cases, each being constructed in detail for their special purposes; the building on the park side is devoted to private patients and its elaborate finish excels any hotel in the city; on the Madison-avenue side is the dispensary, every part of which is adapted in structure and equipment for its special work. The house for the training school for nurses, the children's wards, the operating rooms which are numerous and for special purposes, the pathological department, the mortuary with its exquisite chapel, and the kitchen and laundry are all, without exception, models in construction and equipment. It should be stated that this hospital, though supported by private funds, is never lacking in the means necessary for its full and constant operation.

A Reserve Army Medical Corps.

A plan of having a reserve army medical corps has been perfected by the Surgeon-General and approved by the Secretary of War and will become law. The principal feature of the Bill authorises the President to issue commissions as first lieutenants in such corps to such graduates of reputable schools of medicine, citizens of the United States, as shall from time to time, on examination to be prescribed by the Secretary of War, be found physically, mentally, and morally qualified to hold such commissions, the persons so commissioned to constitute and to be known as the medical reserve corps. In emergencies the Secretary of War may order officers of the medical reserve corps to active

duty in such numbers as the public interests require and may continue such officers on such duty so long as their services are necessary. It is provided that an officer of this corps who is unwilling to serve shall not be required to do so. When on duty such officer has all the authority and the full pay of a regular medical officer of the same rank.

March 26th.

Obituary.

FRANK RENAUD, M.D. EDIN., M.R.C.S. ENG.

BY the death of Dr. Frank Renaud Manchester has lost her oldest consultant. Born in London in 1819 of an old Huguenot family, he appears to have begun some preliminary medical studies in England but soon went to Edinburgh where he took his degree of M.D. in 1844 and in the same year became a Member of the Royal College of Surgeons of England and a Licentiate of the Society of Apothecaries. He at once settled in Manchester and in 1845 was elected one of the physicians to the Ardwick and Ancoats Dispensary which has now developed into the Ancoats Hospital with 114 beds for in-patients. In 1848 he was elected by the casting vote of the chairman one of the honorary physicians to the Royal Infirmary. In those days the physicians and surgeons were elected by the votes of the infirmary trustees—i.e., by the subscribers of three guineas a year—and the proceedings resembled those of a Parliamentary election. The polling took place at the infirmary. Each candidate had his committee, and cabs and carriages were in requisition. The last election under these conditions took place in 1866 when the late Dr. J. E. Morgan and Dr. H. Simpson were candidates, the latter being elected. Shortly afterwards another vacancy for a physicianship occurred, when Dr. Morgan, being unopposed, had a walk over. Soon after his appointment at the infirmary Dr. Renaud became lecturer on medical jurisprudence at the Pine-street Medical School but subsequently exchanged this position for the chair of morbid anatomy and pathology which he occupied with distinction. The Pine street school in course of time became the medical faculty of the Owens College but before that time Dr. Renaud had relinquished his connexion with the medical school. His opinion was much valued by the public and by the members of his own profession and in addition to his busy consulting practice he became the consulting physician to various lunatic asylums. His connexion with the Manchester Royal Infirmary, in which institution he always took the most affectionate interest, was maintained unbroken from 1848 to 1903 as physician, consulting physician, and advisory member of the board, to which honourable and complimentary position he was elected by the board of management in 1892. He was a man of what is called a conservative mind, clinging somewhat to the old ways and not fond of change for the sake of change, and so during the long drawn-out controversy as to the removal and rebuilding of the infirmary he was the staunchest and most uncompromising advocate of its retention in Piccadilly. When therefore it was decided by the trustees that it should be rebuilt in Stanley-grove he resigned his seat on the board, together with the chairman and the majority of the members. But the respect in which he was held by those who agreed with, and by those who differed from, him was so great that it culminated in the presentation to the infirmary of his portrait in oils which now hangs in the board room of the institution which had been so long dear to him and to which he had given so much of his time, his sympathy, and his talents. The late Mr. John Thomson, the chairman of the new board, in accepting the portrait, said that Dr. Renaud "had endeared himself to all who knew him by his courtesy and kindness and nothing could exceed the interest he had taken in the Royal Infirmary. There was no one whose likeness had a greater right to a place in the centre of that institution." His interests were, however, not confined to his professional work. He had a strong literary bent and was an enthusiastic antiquarian. In 1876 he prepared for the Cheetham Society "Contributions towards a History of the Ancient Parish of Prestbury," much of which information was embodied by Mr. Earwaker in his "East Cheshire, Past and Present," and led to his election as a Fellow of the Society of Antiquaries. He contributed many papers to the Transactions of the Lancashire and Cheshire Antiquarian Society on its establishment in 1883. In 1885 he wrote under the auspices and authority of the Manchester Royal Infirmary a short history of the "House of Recovery" in Aytoun-street, the fever hospital connected with the infirmary. At one time, indeed, the fever cases were treated in wards in the upper storey of the infirmary itself. Now they are dealt with at the Monsall Hospital which has passed under the control of the corporation. Until near the close of his life his energy and tenacious vitality seemed to endow him with perpetual youth and though living for many years at Prestbury and then at Alderley Edge, he would till quite recently go to his consulting rooms in Manchester, more perhaps from habit than for the fees which it pleased him to think an "octogenarian physician," as he called himself, might chance to pick up, and he was present at the annual meeting of the infirmary trustees a few weeks ago. He married late in life a lady of one of the Cheshire county families, who died two or three years ago, and left no family. His funeral at Alderley was marked by many tokens of respect and regard by members of the infirmary board and medical staff and by representatives of many public bodies as well as by private friends.

JOSEPH PEEKE RICHARDS, M.R.C.S. ENG., L.S.A.

Mr. Joseph Peeke Richards, whose death occurred somewhat suddenly at Ealing on March 22nd, will be regretted by the many friends who knew and esteemed his sterling qualities of character. He was the son of a medical man and was educated at King's College, London, of which he was an Associate, taking his medical diplomas in 1863. After qualifying he became house surgeon to the Stockport Infirmary; his next post was that of assistant medical officer at the Devon County Asylum whence he was elected to a similar post at the Hanwell County Asylum under Dr. J. Murray Lindsay. On Dr. Lindsay's resignation Mr. Richards succeeded him in the office of medical superintendent of the female department. Mr. Richards discharged the duties of this office for upwards of 20 years with distinguished success and ability. His conscientious devotion to duty and his methodical habits and keen judgment made him a very successful administrator of the large establishment committed to his charge. His thorough general knowledge of his profession and careful study of his cases, in addition to his personal sympathy with his patients, showed him to be a most capable alienist physician. The deceased gentleman, who was 63 years of age, has left a widow and family to deplore their bereavement.

Medical News.

UNIVERSITY OF ABERDEEN.—The following candidates have completed the first medical examination:—

Ernest E. Allaway, John Anderson, Douglas Walker Bruce, A. L. E. Coleman, William Y. Davidson, Thomas Donaldson, Norman A. Duncan, James William Littlejohn, W. J. Macintosh, Daniel J. McKinnon, James M. Mathieson, Harry Middleton, Secessene Pierroux, Walter Richards Stephen, Alexander Stewart and William Lemmon Stewart.

The following have passed a portion of the first medical professional examination:—

William Stephen Angus, George Davidson, John Geddes, Herbert Hargreaves, James B. McAllan, William George McDonald, Elizabeth McHardy, Elizabeth M. McLaggan, Andrew James Shinnie, Alex. B. Trail, M. J. Williamson, and Charles Coutts Wood.

The following have completed the second medical professional examination:—

Willian Bain, *Robert Chalmers, George Cooper, *James George Copland, George Forbes Dawson, Alexander McRobbie Donaldson, *Mary W. Durno, Robert James Duthie, George Johnston Forgie, †John Frederic Gill, *Roderick M. Gunn, Adam Hutton, Cecil V. Impey, Adam Johnston, Arthur Kellas, James Laing, Andrew S. Leslie, John G. McGregor, Dalziel B. McGregor, Robert William McPherson, William L. Millar, Mearns A. Milne, James Emsly Mitchell, John Hay Moir, S. V. van Niekerk, Alexander Paterson, James Raffan, Patrick M. Rennie, John R. Stewart, Forbes J. Stuart, Frank P. Sturm, Arthur P. Troup, Alexander F. Wallace, Cristina Wilson, and *William Henry Wishart.

The following have passed the first portion of the second medical professional examination:—

Henry Begg, William Begg, Theodore Chalmers, James McK. Clark, Stewart C. Howard, Eneas K. Mackenzie, William A. H. McKerron, and John Murray.

The following have completed the third medical professional examination:—

*Robert Brown, Hubert K. W. H. Dornhorst, Robert R. Duncan, Richard Eager, George J. Forgie, William Low, *James B. McDiarmid, James McIntosh, James Mackenzie, Kenneth Mackinnon, George Milne, Harry Ross Neilson, Paul B. Roth, Robert F. Russell, James Archibald B. Sim, Charles M. Smith, *Robert H. Spittal, John H. Stephen, J. F. B. de Villiers, and Lisette A. M. Wilson.

The following have passed the first portion of the third medical professional examination:—

Mary R. Bisset and William Ewan Reid.

The following have passed the final medical professional examination for M.B. and Ch.B. under the new regulations:—

George Adam, Aberdeen; Francis Anderson, Gamrie; William Beattie, Gamrie; †James Clark, Sorn, Ayrshire; Alexander Dyce Davidson, Aberdeen; Francis W. Davidson, Brompton, London; Alexander Duguid, Aberdeen; James Farquhar, Aberdeen; Alexander Flett, Findochty; Archer I. Fortescue, Aberdeen; James Alexander Gibb, Udny; James S. Gray; J. D. Henderson, Aberdeen; John Hunter, Aberdeen; Alexander Hutchison, Aberdeen; Herbert M. Jamieson, Aberdeen; F. Hernaman Johnston, Aberdeen; Neil Kennedy; William W. J. Lawson, Aberdeen; Donald McKay, Dufftown; Malcolm Macleod, Balallan, Stornoway; Charles G. MacMahon, Aberdeen; William M. McPherson, Newburgh; Alexander McRobbie, Aberdeen; Archibald D. Pringle, Aberdeen; James Robertson, Aberdeen; Alexander Nicolas Ross, Balintore, Ross-shire; B. R. G. Russell, The Manse, Walls, Orkney; Herbert W. B. Ruxton, Balmacassie, Ellon; William Alexander Smith, Hatton, Cruden; and *William Wood, Peterhead.

M.B. and C.M. (Old Regulations).—Alexander S. Cardno.

* Passed with distinction. † Passed with much distinction.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—The following is the list of prizes awarded for the winter session, 1903–04:—Descriptive Anatomy: Junior: D. P. Clement, first prize (£2) and medal; and G. S. Levis, second prize (£1) and certificate. Senior: D. Adams, first prize (£2) and medal; and P. G. M. Elvery, second prize (£1) and certificate. Practical Anatomy: First year: G. S. Levis, first prize (£2) and medal; and D. P. Clement, second prize (£1) and certificate. Second year: P. G. M. Elvery, first prize (£2) and medal; and T. A. Buchanan, second prize (£1) and certificate. Practice of Medicine: R. Bury, first prize (£2) and medal; and P. D. Sullivan, second prize (£1) and certificate. Surgery: J. S. Dunne, first prize (£2) and medal; and R. Bury and F. Lyburn (equal), second prize (£1) and certificate. Midwifery: J. S. Dunne, first prize (£2) and medal; and R. A. Brown, second prize (£1) and certificate. Physiology: D. Adams, first prize (£2) and medal; and T. Sheehy, second prize (£1) and certificate. Chemistry: D. P. Clement, first prize (£2) and medal; and A. E. S. Martin, second prize (£1) and certificate. Pathology: L. Lucas, first prize (£2) and medal; and P. D. Sullivan, second prize (£1) and certificate. Physics: A. E. S. Martin, first prize (£2) and medal; and W. G. Ridgway, second prize (£1) and certificate.—The lectures and practical courses of the summer session will commence on Monday, April 11th.

UNIVERSITY OF OXFORD: SECOND EXAMINATION FOR THE DEGREE OF B.M. AND B.CH.—The Board of Faculty of Medicine gives notice of the following changes in its regulations (see Examination Statutes, pp. 190, 191). The regulations under the heads of medicine, surgery, midwifery, and pathology have been amended and now stand as follows. V. Medicine.—The examination shall be held in the principles and practice of medicine and shall consist of the following parts: 1. A written paper of three hours. 2. Clinical work. This shall include (*a*) a full clinical report upon a given case, together with a statement of the treatment, and the writing of appropriate prescriptions; and (*b*) an oral examination upon other cases selected by the examiners. 3. Practical examination in the chemical and microscopical methods of diagnosis, such as the investigation of urine, identification of parasites, examination of blood, sputum, &c., and on the use of special instruments for diagnostic purposes. 4. A *viva voce* examination. VI. Surgery.—The examination shall be held in the principles and practice of surgery. (Candidates will be expected to possess a general knowledge of the surgery of the eye and ear). The examination shall consist of the following parts: 1. A written paper of three hours. 2. Clinical work, partly in writing, partly oral. 3. An examination in surgical anatomy, the methods of operations, questioning on the living or dead subject, and the use of surgical instruments and appliances. 4. A *viva voce* examination. VII. Midwifery.—As at present, except that the words "(1) paper work, (2) practical examination ....." have been replaced by the words "(1) a written paper of three hours; (2) a practical and *viva voce* examination. ....." In the *viva-voce* examination in medicine, surgery, and midwifery candidates shall be shown pathological specimens and shall be examined upon such appearances as bear upon the clinical aspects of disease. VIII. Pathology (including General Pathology, Morbid Histology, and Bacteriology).—The examination shall consist of three parts: (1) a written paper of three hours; (2) a practical examination of three hours; and (3) a *viva-voce* examination. These regulations will come into force at once and take effect at the examinations of Trinity Term, 1904.

HEALTH OF GLOUCESTER.—The medical officer of health of Gloucester reports that during 1903 the death-rate of that city was 12·1 per 1000, being the lowest on record. The zymotic death-rate was 0·76 per 1000. The birth-rate was 28·2 per 1000.

BRISTOL EYE DISPENSARY.—The annual meeting of the subscribers to this institution was held on March 29th under the presidency of Mr. P. J. Worsley. The medical report stated that 2268 patients had been treated, being an increase of 444 as compared with 1902. During the year a large out-patient room and a waiting room had been added to the building. The financial statement was satisfactory and showed a favourable balance of £47.

THE COUNTY COUNCIL ELECTIONS IN THE WEST OF ENGLAND AND WALES.—To the names published in THE LANCET of March 12th, on p. 760, must be now added those of Mr. John Beddoe, M.D., LL.D. Edin., B.A., F.R.C.P. Lond., F.R.S., for the Bradford-on-Avon district of the Wiltshire county council; Mr. Mervyn Seppings Wilson, B.A. Cantab., M.R.C.S. Eng., L.S.A., for the Chippenham district of the Wiltshire county council; Mr. Ptolemy A. Colmer, M.R.C.S. Eng., L.R.C.P. Lond., L.S.A., for the Yeovil borough of the Somersetshire county council; Mr. T. S. Hawkesford Hincks, M.D., C.M. Edin., J.P., for the Hay division of the Brecknockshire county council; whilst Mr. J. James, M.R.C.S. Eng., L.R.C.P. Lond., and Dr. Evans have been elected for the Taliesin and Nantcwnlle districts respectively of the Cardiganshire county council.

THE PUBLIC HOUSE TRUST.—The third annual report of the executive committee of the Central Public House Trust Association, of which Lord Grey is President, has just been issued and forms a pamphlet of some 200 pages, containing complete information relating to the 42 existing trust companies. The association was formed in 1901 with two objects: (1) to convert, wherever possible, the public-house from a drinking bar into a house of refreshment for the supply of wholesome food and non-alcoholic liquors as well as of beer and spirits; and (2) to provide such an organisation as will enable the licensing authorities to secure that all new licences with their high monopoly values shall be administered as a trust in the interests of the public and not by private individuals for their personal gain. According to the report, "the fear expressed in some quarters that trust management might tend to increase the national consumption of drink is shown to be unwarranted by facts, and evidence is given of the influence exercised in favour of the higher temperance by properly conducted trust houses."

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

DROUGHT, PERCY J., L.R.C.S.I., L.K.Q.C.P.I., L.M., has been appointed Divisional Surgeon to the Police of J Division, stationed at Barkingside.

GRIFFITH, W. S., M.B., C.M. Edin., has been appointed Certifying Surgeon under the Factory Act for the Milford Haven District of the county of Pembroke.

HOGG, GUSTAVE H., M.D. Edin., has been appointed Port Health Officer for Launceston, Tasmania.

JAMES, WALTER T., M.B., Ch.B. Edin., has been appointed Second Assistant Medical Officer to the Joint Counties Asylum, Carmarthen.

JEFFARES, J., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Certifying Surgeon under the Factory Act for the Kegworth District of the county of Leicester.

JONES, HERBERT, L.R.C.S. Irel., D.P.H., has been appointed Honorary Bacteriologist to the Herefordshire General Hospital, Hereford.

MACKINNON, CHARLES, M.A., M.B., C.M. Glasg., has been re-appointed Medical Officer for the South District by the Cirencester Board of Guardians.

PARKER, CHARLES, M.B., C.M. Edin., has been appointed Honorary Medical Officer of the General Hospital, Launceston, Tasmania.
SPROTT, GREGORY, M.D. Glasg., has been appointed Port Health Officer for Hobart, Tasmania.
STUMBLES, H. M., M.B., B.S. Edin., has been appointed Certifying Surgeon under the Factory Act for the Amble District of the county of Northumberland.
THOMAS, JOHN LEWIS, M.R.C.S., L.S.A., has been appointed Medical Officer of Health of the Brynmawr Urban District.
YOUNG, C. W. F., M.D. Lond., F.R.C.S., has been appointed County Medical Officer to the Middlesex County Council.
YULE, J. S., M.D., B.S. Melb., has been appointed Clinical Assistant to the Chelsea Hospital for Women.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BURY INFIRMARY.—Senior House Surgeon. Salary £110, with board, residence, and attendance.
EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—Assistant Physician.
GREAT YARMOUTH HOSPITAL.—House Surgeon. Salary £90 per annum, with board, lodging, and washing.
HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—House Surgeon, unmarried, for six months. Salary £20, with board and residence.
LEEDS HOSPITAL FOR WOMEN AND CHILDREN.—Resident House Surgeon for six months. Salary at rate of £80 per annum.
LEICESTER INFIRMARY.—Clinical Assistant for six months. Honorarium of £10 10s., with board, apartments, and washing.
MAIDSTONE, WEST KENT GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £120, with board and residence.
MANCHESTER SOUTHERN AND MATERNITY HOSPITAL.—Resident House Surgeon for six months. Salary £60 per annum and board.
MARGARET-STREET HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, 26, Margaret-street, Cavendish-square, W.—Assistant Physician (honorary).
MIDDLESEX HOSPITAL, W.—First, Second, and Third Assistants to the Director of the Cancer Research Laboratories. Salary of First Assistant £200 a year, of Second £150, and of Third £100.
PRESTON ROYAL INFIRMARY.—Assistant House Surgeon. Salary £60 per annum, with board, washing, &c.
ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—Resident House Physician and Resident House Surgeon (females), both for six months. Board, &c., provided. Also House Physician and Casualty House Surgeon, both for six months. No salary given, but board, &c., provided.
ROYAL EYE HOSPITAL, Southwark, S.E.—House Surgeon for six months, renewable. Salary 50 guineas per annum, with board and residence. Also Clinical Assistants (honorary).
ROYAL SEA-BATHING HOSPITAL, Margate.—Resident Surgeon as Junior for six months and as Senior for a like period. Salary at rate of £80 and £120 per annum respectively, with board and residence.
SAMARITAN FREE HOSPITAL FOR WOMEN, Marylebone-road, N.W.—Clinical Assistants.
SEAMEN'S HOSPITAL SOCIETY (Dreadnought), Greenwich, S.E.—House Physician. Salary £65 per annum. Also Junior Resident Medical Officer. Salary £40 per annum. Both with board, residence, and washing.
SOCIETY OF APOTHECARIES OF LONDON.—Examiner in Surgery.
ST. BARTHOLOMEW'S HOSPITAL.—Assistant Physician.
TIVERTON, DEVONSHIRE, INFIRMARY AND DISPENSARY.—House Surgeon and Dispenser. Salary £80 and all found.
VICTORIA, AUSTRALIA.—Inspector-General of the Insane. Salary not to exceed £1500. Apply to the Agent-General for Victoria, 142, Queen Victoria-street, London, E.C.
WARWICK COUNTY ASYLUM, Hatton, near Warwick.—Third Assistant Medical Officer. Salary £130, rising to £150, with apartments, board, &c.

Births, Marriages, and Deaths.

BIRTHS

BARTON.—On March 30th, at Redcliffe-gardens, South Kensington, the wife of Charles N. Barton, L.R.C.P. Lond., M.R.C.S. Eng., L.S.A. Lond., of a daughter.
LOCKYER.—Mrs. Lockyer, wife of Cuthbert Lockyer, M.D., B.S., M.R.C.P., F.R.C.S., of 117a, Harley-street, of a son.
SICHEL.—On March 30th, at The Lawn, Guildford, the wife of Gerald Sichel, F.R.C.S., late R.N., of a son.

MARRIAGE.

PARKER—WISE.—On April 5th, at St. Peter's, Eaton-square, by the Rev. C. S. Woodward, Arthur Percy Parker, M.A., F.R.C.S., to May, only daughter of A. J. P. Wise, of Belleville Park, co. Waterford.

DEATHS.

ARNISON.—On April 4th, at Allendale Town, Northumberland, George Arnison, M.R.C.S., &c., aged 73 years.
BROWN.—On March 30th, at the Cotswold Sanatorium, Robert Major Brown, M.A., M.B. Cantab., J.P., aged 44 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE OLD LOVE AND THE NEW.

WE have received a copy of the *Christian Science Journal* for November, 1903, which contains "an experience of one who practised medicine for 12 years and then came to Christian Science." The gentleman who communicates the story of his conversion from scientific medicine to Christian Science appears to have founded his change of tenets upon the fact that a child of his, having shown symptoms of hip disease, and having spent many months in the open air at "what is considered one of the most bracing seaside places in England," became better about the time when help was sought from Christian Science. We feel that a man with a mind so superior to all logic as to be able to argue in this manner must be terribly cramped by the common-sense definitions and limitations of medicine. For we observe that he has ceased to practise. The causal relations of common events as revealed to trained intelligence by hard work could mean nothing to so soaring a spirit, and it is well that Mr. W. F. W. Wilding has ceased to practise medicine. But ought he to wear the favours of the old love while professing his affection for the new? Mr. Wilding signs his communication, "M.R.C.S., L.R.C.P."

"THE FILTHIEST TOWN ON EARTH."

IN the *Times* of April 6th a special correspondent gives a graphic account of the Chumbi Valley and he describes the town of Phari as the filthiest town on earth. The sod-built hovels of one storey, or at most two storeys, high prop each other up. A blue haze from the dried yak dung fuel fills the rooms which are permanently covered with a layer of soot. Water is almost non-existent except during the melting of the snow. The only access for light and air is a square hole in the flat roofs. "In the best quarter of the town, that in which the houses are two-storeyed, the heaped-up filth—dejecta and rejecta alike—rises to the first-floor windows, and a hole in the mess has to be kept open for access to the door. ..... In the middle of the street, between the two banks of filth and offal, runs a stinking channel which thaws daily. In it horns and skulls and bones of every beast eaten or not eaten by the Thibetans lie till the dogs and ravens have picked them clean enough to be used in the mortared walls and thresholds. ..... Here and there a stagnant pool of filth has partially defied the warmth and carrion, verminous rags, and bones are set round it in the broken yellowish ice. ..... A curdled and filthy torrent flows through the market place and half-breed yaks shove the sore-eyed and mouth-ulcered children aside to drink at it." The men and women never wash themselves. The extreme cold and the fact that the diminished atmospheric pressure at the altitude at which Phari is situated causes breathlessness and apathy to follow on the slightest physical exertion are, no doubt, contributing causes to this almost incredible condition of human existence.

TREATMENT OF FLAT FOOT.

WRITING on this subject in the February number of the *Birmingham Medical Review* Mr. Leonard Gamgee says that the primary cause of the ordinary or static form of flat foot lies, not in the foot itself, but in the muscles of the calf of the leg. The three chief muscles concerned are the tibialis posticus, the flexor longus hallucis, and the peroneus longus. The first of these, after passing round the back of the internal malleolus, passes under, and gives support to, the inferior calcaneo-scaphoid ligament, thus aiding that ligament in keeping in position the head of the astragalus, which is the keystone of the longitudinal arch of the foot. The flexor longus hallucis tendon forms the tie-rod to the longitudinal arch; while the peroneus longus tendon, in crossing the sole of the foot from without inwards, is one of the chief forces maintaining the transverse arch. Weakness of these muscles lessens the support given by them to the arches of the foot and the whole stress of maintaining the arches is thrown upon the ligaments, which stretch, and so the condition of flat foot is caused. The calf muscles will nearly always be found to be weak, soft, and flabby and the treatment to be relied upon chiefly is that directed towards the restoration of tone and strength to these muscles. The patient should regularly, twice or three times a day, carry out the following exercises, the shoes, of course, having been removed. 1. With the toes turned in the patient raises himself on to tip-toe and then lets the heels drop to the ground again. This should be done quickly and repeated until the muscles of the leg feel tired. The turning in of the toes is essential to its success. 2. The patient, standing, should raise the inner border of the foot from the ground till the foot rests on its outer edge. The sole is then brought flat on to the ground again. This also should be done sharply and repeated a number of times. 3. The patient, sitting with the knees crossed, circumducts the foot from without inwards, sweeping the toes round as wide a circle as possible. At first the patient finds it possible to continue these exercises for only a few minutes, but the time can

generally be lengthened as the muscles become stronger. Combined with the exercise, massage to the foot and leg should be done daily and the patient ordered to take a moderate amount of walking exercise but to avoid long standing. In incipient cases these measures are generally sufficient without recourse being had to any artificial support to the arch in the form of pads or metal soles; but in more severe cases a metal instep arch, properly fitted to the boot, is useful, while in still more severe cases the boot invented by H. O. Thomas is most serviceable, as it both gives support to the arch and corrects the tendency to valgus. When there is marked valgus, treatment by exercises and supports should not be commenced till the valgus has been overcome. This may be done in one of two ways: 1. By tenotomy of the peronei tendons. This certainly overcomes the valgus but it tends to cause flattening of the transverse arch and so is not, in Mr. Gamgee's opinion, to be recommended. 2. Under an anæsthetic steady traction is made on the foot in an inward direction. The peronei muscles can be felt to yield, the valgus disappears, and the foot can be brought into a position of slight varus. At the same time the arch can to a large extent be restored. In this position the foot is fixed in a plaster case, extending from the balls of the toes to just below the knee. The plaster case should be kept on for from three to six weeks; and on its removal treatment by exercises and massage as above described must be regularly persevered in and a Thomas's boot must, for some time at all events, be worn.

DR. J. T. C. CONRY'S DEFENCE FUND.

To the Editors of THE LANCET.

SIRS,—I thank you for the insertion of my letter in your issue of March 26th, 1904, and also for the annotation. My co-signatories have nominated Mr. Walter L. Roberts of 79, Cambridge-gardens, North Kensington, to act with me in the matter, and Mr. E. Canny Ryall of 30, Harley-street, W., and Mr. Albert Stephen Hayman of 45, Welbeck-street, Cavendish-square, W., have most kindly volunteered their advice and assistance and have expressed their willingness to receive subscriptions. We shall feel indebted to you if you will publish in your columns a list of contributions. The list of those who have subscribed up to this date is given below. I am, Sirs, yours faithfully,

EDWIN T. ENSOR.

162, Ladbroke-grove, North Kensington, W., April 5th, 1904.

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AN IMMENSE TRACT OF LAND WITHOUT MEDICAL MEN.

THE *Eastern Review* (Russian) says of the unsatisfactory state of affairs from the medical point of view in the Verchoyansk district, which is more than twice the size of France, that there are only one medical man, one accoucheur, and three field medical officers, of whom one lives at Zuluna, 1000 versts from the town of Verchoyansk, and two belong to the Verchoyansk syphilis infirmary, attached to which is a dispensary where the most necessary medicines are simply not stocked. The medical staff was changed lately but without improvement in the situation. The only patients received into the infirmary were those who could work. To the patients the ultimatum was recently presented, work or leave, and nearly all left—and it was winter.

NOTE ON THE VALUE OF GARLIC AS A TREATMENT FOR TUBERCULOSIS.

To the Editors of THE LANCET.

SIRS,—Dr. Giulio Cavazzani's able article on the action of garlic as a prophylactic in cases of tuberculous infection, which appeared in THE LANCET of Jan. 9th, p. 90, and a further communication on the same subject by Dr. W. C. Minchin of Kells in your issue of Feb. 13th, p. 481, draw attention to a subject worthy of the closest consideration by medical men and experimental investigation by pathologists.

For some years past, as opportunity presented itself, I have been working out the influence exerted by garlic on such different forms of tuberculosis as have presented themselves for treatment in the military hospitals to which I have been attached. The garlic treatment was first brought to my notice owing to a relative of mine becoming infected with tuberculosis of the lungs whose sputum at the time swarmed with Koch's bacilli; this patient had a cavity in the left apex of the size of a walnut and also several consolidated patches in the lower lobe. He has been under continuous treatment with garlic for the past three years and has had his disease undoubtedly arrested as has been proved by repeated physical and bacteriological examinations. The treatment carried out by Dr. Minchin in his case I have adopted in my own cases in the army and have met with unqualified success, in so far that the disease has been temporarily arrested in all early cases and in several chronic fibroid cases which I have seen in consultation in private practice. I do not claim that each case has been cured, as tuberculosis of the lung may apparently appear cured while in reality it lies quiescent and recurs at some later date, but there is no question that apparently as far as general health, physical signs, and careful bacteriological examination are concerned the results have been most satisfactory and gratifying. In the case of my patients among soldiers, they have been able to proceed to England from this country, and were it not for the arduous strain of military duty they might have resumed their previous occupation in this country. I have also tried the external application of garlic crushed in a mortar and applied as a poultice to tuberculous ulcers with most beneficial results and strongly recommend its trial. It has a powerful germicidal action and when mixed with powdered charcoal it has the power of cleansing and healing the most fœtid ulcer. On my arrival in India I was much interested to find that garlic was used by the natives of this country and that it had been used for generations past as a universal household remedy for all forms of skin disease, inflammations, cuts, boils, and suppurating sores. They apply it cooked, or sometimes raw, mixed with wood ash, and leave it on or repeat its application until vesication occurs. They also use it in solution with rice water in cases of dyspepsia and gastric catarrh and I am informed with success. I may add that in my cases of tuberculosis of the lungs I have found the expressed juice of the fresh plant mixed with a little water in one or two drachm doses taken before bed-time and first thing in the morning internally, to have given the best results, and in bad cases I have used the expressed juice of the fresh plant alone (without dilution) on a sponge in a zinc inhaler (Burney Yeo's pattern) at night-time and also at intervals during the daytime, as well as the internal administration of the diluted juice. In no case have I found garlic, when taken internally, to affect digestion, and after the first few doses my patients did not object to it, in fact, some of them stated it improved their appetites and relieved their breathing very much.

I am, Sirs, yours faithfully,

E. BLAKE KNOX, M.D. Dub.,
Captain Royal Army Medical Corps, late Assistant Professor of Pathology and Bacteriology, Trinity College, Dublin.

Simla, March 8th, 1904.

THE MORPHIA HABIT.

To the Editors of THE LANCET.

SIRS,—Can any reader of THE LANCET recommend from personal knowledge a comfortable and well-managed establishment in England where the morphia habit is successfully treated? Expense is no object. Bracing air, good cuisine, and plenty of amusements are essential. I am, Sirs, yours faithfully,

March 31st, 1904. J. A. F.

CHLORIDE OF ZINC IN GONORRHŒA.

SURGEON writes: "Can any reader kindly name any book or publication as to the use of chloride of zinc in gonorrhœa, containing amongst other information the following: What class of cases are suitable for its use? Should it be used *before* gonorrhœa is *definitely* diagnosed? What strength lotion, how many times used in 24 hours, how long to be retained in urethra each time, and should it at each time of injection be applied for an equally long time to the whole external mucous membrane? Should the strength of the lotion be varied? If so, what are the indications for varying it and what are the indications for discontinuing it altogether? For how many days or weeks is it usually applied?"

M.B. will not find Dr. Maudsley's well-known book to contain the information which he seeks. The Transactions of the Psychical Research Society, Modern Spiritualism, a History and a Criticism, by Mr. F. Podmore, the work by the late F. W. H. Myers upon Personality after Death, the late Dr. F. G. Lee's book "Glimpses of the Unseen," and Mrs. Crowe's "Night Side of Nature" might be consulted.

Research is working at the subject of the reducing power of creatinine and uric acid on Fehling's solution and would be glad to know of any works of reference dealing with it.

M.D.—The address of the British Syphon Manufacturing Company is 2, Gresham-buildings, Basinghall-street, E.C. The works are at Barnsbury, N.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, April 7th, 1904.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radia in Vacuo.	Maximum Temp. Shade.	Min. Temp	Wet Bulb.	Dry Bulb.	Remarks at 8.30 A.M.
April 1	29·72	W.	0·03	103	53	41	42	46	Cloudy
,, 2	30·16	S.W.	...	103	57	41	41	44	Overcast
,, 3	30·00	W.	0·04	102	56	43	42	45	Cloudy
,, 4	29 99	W.	0 06	92	52	41	41	45	Fine
,, 5	30 05	S.W.	0·09	68	56	45	45	47	Overcast
,, 6	29 77	W.	0·12	106	59	45	51	53	Cloudy
,, 7	29 80	W.	...	86	53	41	43	47	Cloudy

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (11th).—London (2 P.M.), St. Bartholomew's (1.30 P.M., St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.).

TUESDAY (12th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Royal Ear (3 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.).

WEDNESDAY (13th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

THURSDAY (14th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

FRIDAY (15th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.).

SATURDAY (16th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

MONDAY (11th).—MEDICAL SOCIETY OF LONDON (11, Chandos-street, Cavendish-square, W.).—8.30 P.M. Clinical Cases.

TUESDAY (12th).—ROYAL MEDICAL AND CHIRURGICAL SOCIETY (20, Hanover-square, W.).—8.30 P.M. Dr. H. Cotton will show (for Discussion) a Case of Supposed Cancer of the Rectum for which Colotomy was Performed. Papers:—Dr. W. A. Turner: The Mental Condition in Epilepsy in Relation to Prognosis.—Mr. A. W. Mayo Robson: Peptic Ulcer of the Jejunum.

MEDICO-LEGAL SOCIETY (20, Hanover-square, W.).—7.30 P.M. Council Meeting. 8.15 P.M. Adjourned Discussion on Mr. S. B. Atkinson's paper on Live-birth—in Theory and Practice. Papers:—Mr. J. W. Orr: A Plea for Cremation.—Earl Russell: The Weight to be attached to Medical Evidence. Specimens: Dr. H. Littlejohn and Dr. F. J. Wethered: Puncture Wounds of the Heart.

SOCIETY FOR THE STUDY OF INEBRIETY (Rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, W.).—3 P.M. Council Meeting. 3.30 P.M. Annual Meeting to Elect Officers, &c. 4 P.M. Discussion on the Relation of Inebriety to Mental Disease (opened by Dr. R. Jones, Claybury).

WEDNESDAY (13th).—HUNTERIAN SOCIETY (London Institution, Finsbury-circus, E.C.).—8.30 P.M. Clinical Evening.

DERMATOLOGICAL SOCIETY OF LONDON (11, Chandos-street, Cavendish-square, W.).—5.15 P.M. Demonstration of Cases of Interest.

SOUTH-WEST LONDON MEDICAL SOCIETY (Bolingbroke Hospital, Wandsworth Common).—8.45 P.M. Clinical Evening.

THURSDAY (14th).—BRITISH BALNEOLOGICAL AND CLIMATOLOGICAL SOCIETY (20, Hanover-square, W.).—8.30 P.M. Discussion on Obesity (re-opened by Dr. W. Bain, Harrogate).

FRIDAY (15th).—EPIDEMIOLOGICAL SOCIETY OF LONDON (11, Chandos-street, Cavendish-square, W.).—8 P.M. Council Meeting. 8.30 P.M. Meeting.

SOCIETY FOR THE STUDY OF DISEASE IN CHILDREN (11, Chandos-street, Cavendish-square, W.).—5.30 P.M. Cases will be shown by Dr. H. Ashby, Dr. Hawthorne, Dr. J. Taylor, Dr. Morison, Dr. A. Smith, Dr. F. Buzzard, Mr. S. Stephenson, and Mr. Pernet. Papers by Mr. L. Bidwell, Dr. G. Carpenter, and Mr. R. C. Dun.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (11th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. E. G. Little: Clinique. (Skin). 5.15 P.M. Dr. G. E. Herman: The Induction of Premature Labour.

TUESDAY (12th).—ROYAL COLLEGE OF PHYSICIANS OF LONDON (Pall Mall East).—5 P.M. Dr. G. Oliver: Recent Studies on the Tissue Lymph Circulation. (Oliver-Sharpey Lecture.)

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. L. Williams: Clinique. (Medical.) 5.15 P.M. Dr. T. C. Fox: Ringworm.

WEDNESDAY (13th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. J. Berry: Clinique. (Surgical.) 5.15 P.M. Dr. H. Tilley: Nasal Discharges—their Diagnosis and Treatment.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—4.30 P.M. Dr. R. P. Brooks: Methods for the Estimation of Refraction.

THURSDAY (14th).—ROYAL COLLEGE OF PHYSICIANS OF LONDON (Pall Mall East).—5 P.M. Dr. G. Oliver: Recent Studies on the Tissue Lymph Circulation. (Oliver-Sharpey Lecture.)

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. Hutchinson: Clinique. (Surgical.) 5.15 P.M. Dr. W. S. A. Griffith: Gonorrhœa in Women.

FRIDAY (15th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. E. Waggett: Clinique. (Ear).

EDITORIAL NOTICES.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

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During the week marked copies of the following newspapers have been received: *Reading Mercury and Oxford Gazette, Liverpool Daily Post, Scotsman, Aberdeen Free Press, Aberdeen Free Press (Weekly), Buxton Advertiser, Boston Independent, Westminster Gazette, Hertfordshire Mercury, Literary Digest (New York), Windsor and Eton Express, Standard, Cardiff News, South Wales Daily News, Surrey Advertiser, Coventry Herald, Birmingham Daily Mail, Mining Journal, Local Government Chronicle, Ipswich Times, &c.*

Communications, Letters, &c., have been received from—

A.—Dr. Thomas Argus, Barrhead; Messrs. Allen and Hanburys, Lond.; Dr. B. Anningson, Cambridge.

B.—Mr. J. W. Benson, Lond.; Mr. C. Birchall, Liverpool; Mr. R. A. Bickersteth, Liverpool; Mr. R. S. Barrow, Dulverton; Mr. H. Butterfield, Northampton; Mr. J. R. Bailey, Lond.; Mr. L. C. S. Broughton, Langley; Dr. A. L. Benedict, Buffalo; Miss M. Brown, Raith; Messrs. Burroughs, Wellcome, and Co., Lond.; Bury Infirmary, Secretary of.

C.—Dr. Gerard Carré, Le Vésinet; Colonial Office, Lond.; Dr. J. T. C Conry, Lond.; Messrs. Chandler and Massey, Toronto, Canada; Mr. R. B. Canning, Lond.; Central Midwives Board, Lond., Secretary of; C. B. M.; Mr. P. J. Cammidge, Lond.; Cheltenham General Hospital, Hon. Secretary of.

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E.—Messrs. Elliott, Son, and Boyton, Lond.; "Elijah the Prophet," Belfast; Dr. C. C. Easterbrook, Ayr; Dr. G. H. Edington, Glasgow.

F.—Dr. J. M. Fortescue-Brickdale, Bristol; Messrs. Fry and Co., Lond.; Fine Art Society, Lond.

G.—Dr. W. Gordon, Exeter; Mr. J. Gillingham, Chard; Mr. Arthur Goulston, Heavitree; Gardner-Baradà Chemical Co., Chicago, U.S.A.; General Lying-in Hospital, Lond., Secretary of; Mr. Henry Gray, Lond.; Dr. John H. Galton, Lond.; Dr. Willingham Gill, Lond.; Mr. A. H. Griffith, Manchester.

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